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MEAN HORIZONTAL FIELDS OF TEMPERATURE AND GEOPOTENTIAL HEIGTH FOR EACH JANUARY, APRIL, JULY AND OCTOBER FOR THE PERIOD 1967-1976

von

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ABSTRACT

In the framework of studies which are concerned with "physical foundations of climate" the variability both in space and time of large-scale horizontal fluxes of energy and momentum will be determined by Fr. DEFANT, P. SPETH, H. FECHNER, E. KIRK and A. OSTHAUS for the period 1967 - 1976. The works are sponsored by the German Research Society within the main-supporting program "physical foundations of climate and climate models". The investigations will be carried out in the so-called wavenumber-frequency domain at the Department of Meteorology at "Institut für Meereskunde" in Kiel and at "Institut für Geophysik und Meteorologie" in Köln. To interpret the results time-averaged fields of temperature and geopotential height are required. These are reproduced for January, April, July and October in the present report; for geopotential height the levels 850 mb, 500 mb, 200 mb and 100 mb have been selected, while for temperature only the levels 850 mb, 300 mb and 100 mb have been choosen, since 500 mb has been presented earlier by P. SPETH (1974, 1978) together with mean meridional cross-selections of temperature.

ZUSAMMENFASSUNG

Im Rahmen von Untersuchungen, die sich mit physikalischen Grundlagen des Klimas befassen, werden die Veränderlichkeit bezüglich Raum und Zeit von großskaligen horizontalen Energie- und Drehimpulsflüssen untersucht von Fr. DEFANT, P. SPETH, H. FECHNER, E. KIRK und A. OSTHAUS; es handelt sich dabei um den Zeitraum 1967 bis 1976. Die Untersuchungen werden von der Deutschen Forschungsgemeinschaft innerhalb des Schwerpunktprogrammes "physikalische Grundlagen des Klimas und Klimamodelle" gefördert. Die Arbeiten werden im sogenannten Wellenzahl-Frequenzbereich in der Abteilung Meteorologie des Instituts für Meereskunde in Kiel und im Institut für Geophysik und Meteorologie in Köln durchgeführt. Zur Interpretation der Ergebnisse benötigt man dabei zeitlich gemittelte Felder der Temperatur und des Geopotentials. Diese werden im vorliegenden Bericht für die Monate Januar, April, Juli und Oktober wiedergegeben; für das Geopotential wurden dabei die Niveaus 85o mb, 5oo mb, 2oo mb und 1oo mb ausgesucht, während für die Temperatur nur die Niveaus 85o mb, 3oo mb und 1oo mb gewählt wurden, da das 5oo mb-Niveau bereits früher durch P. SPETH (1974, 1978) zusammen mit mittleren Meridionalschnitten der Temperatur präsentiert wurde.

REFERENCES

SPETH, P., 1974: Mittlere Horizontalverteilungen der Temperatur und der verfügbaren potentiellen Energie und mittlere Meridionalschnitte der Temperatur für jeden Januar und Juliy aus dem Zeitraum 1967 bis 1972, Berichte aus dem Inst. f. Meereskunde, Nr. 3

SPETH, P., 1978: Mean horizontal fields of temperature, available potential energy and mean meridional cross-sections of temperature for each January and July of the period 1973 until 1976 and for each April and October of the period 1967 until 1976, Berichte aus dem Inst. f. Meereskunde, Nr. 43

THE FOLLOWING SYMBOLS ARE USED

$[T]_{(t)}$ time average of temperature in ^{o}C

$[\phi]_{(t)}$ time average of geopotential height in gpdm (isoline distance:
850 mb/ 500 mb: 40 gpm
300 mb: 80 gpm
100 mb: 160 gpm)

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Fig. 02a- 06b	$[\pi]_{(z)}$, $[\phi]_{(z)}$	850, 500, 300, 100 mb	April 1968
Fig. 07a- 0ab	$[\pi]_{(z)}$, $[\phi]_{(z)}$	850, 500, 300, 100 mb	April 1969
Fig. 01a- 04b	$[\pi]_{(z)}$, $[\phi]_{(z)}$	850, 500, 300, 100 mb	April 197o
Fig. 05a- 08b	$[\pi]_{(z)}$, $[\phi]_{(z)}$	850, 500, 300, 100 mb	April 1971
Fig. 09a-1o2b	$[\pi]_{(z)}$, $[\phi]_{(z)}$	850, 500, 300, 100 mb	April 1972
Fig. 1o3a-1o6b	$[\pi]_{(z)}$, $[\phi]_{(z)}$	850, 500, 300, 100 mb	April 1973
Fig. 1o7a-11ab	$[\pi]_{(z)}$, $[\phi]_{(z)}$	850, 500, 300, 100 mb	April 1974
Fig. 111a-114b	$[\pi]_{(z)}$, $[\phi]_{(z)}$	850, 500, 300, 100 mb	April 1975
Fig. 115a-118b	$[\pi]_{(z)}$, $[\phi]_{(z)}$	850, 500, 300, 100 mb	April 1976
Fig. 119a-122b	$[\pi]_{(z)}$, $[\phi]_{(z)}$	850, 500, 300, 100 mb	October 1967
Fig. 123a-126b	$[\pi]_{(z)}$, $[\phi]_{(z)}$	850, 500, 300, 100 mb	October 1968
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$[T]_{(t)}$ 850 mb JAN. 1967

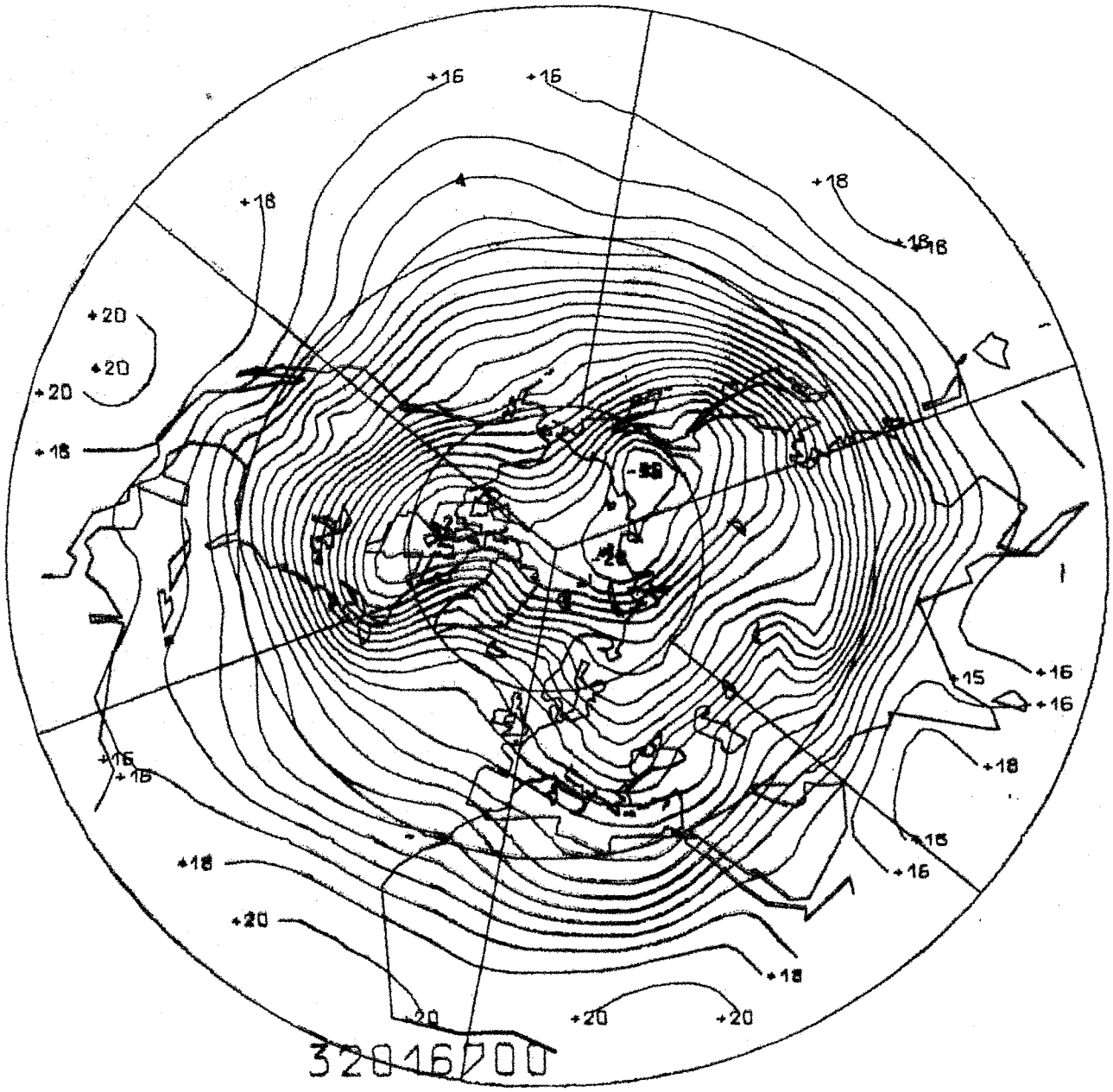


FIG. 1a

$[\phi]_{(t)}$ 850 mb JAN. 1967

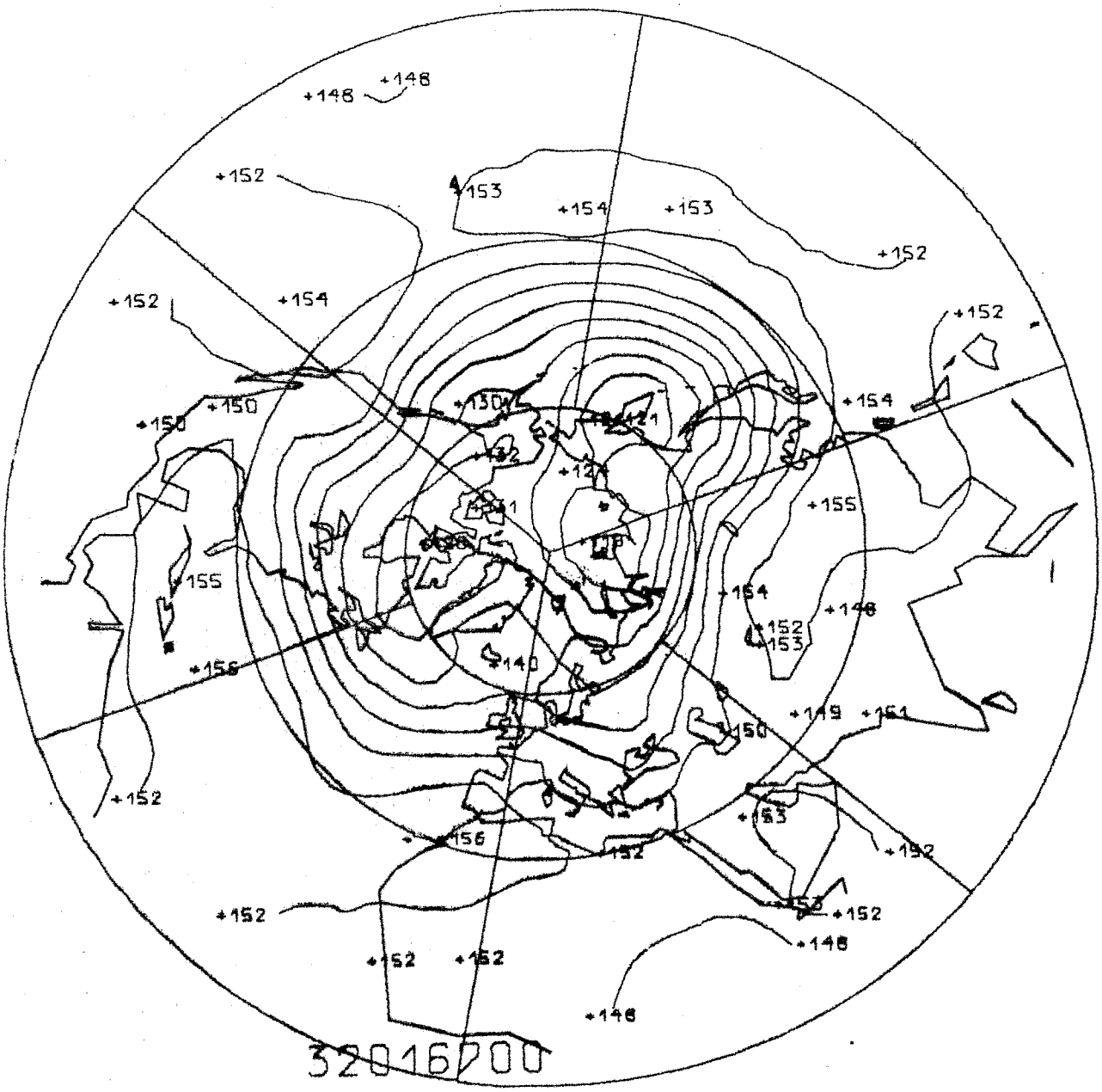


FIG.1b

$[\phi]_{(t)}$ 500 mb JAN. 1967

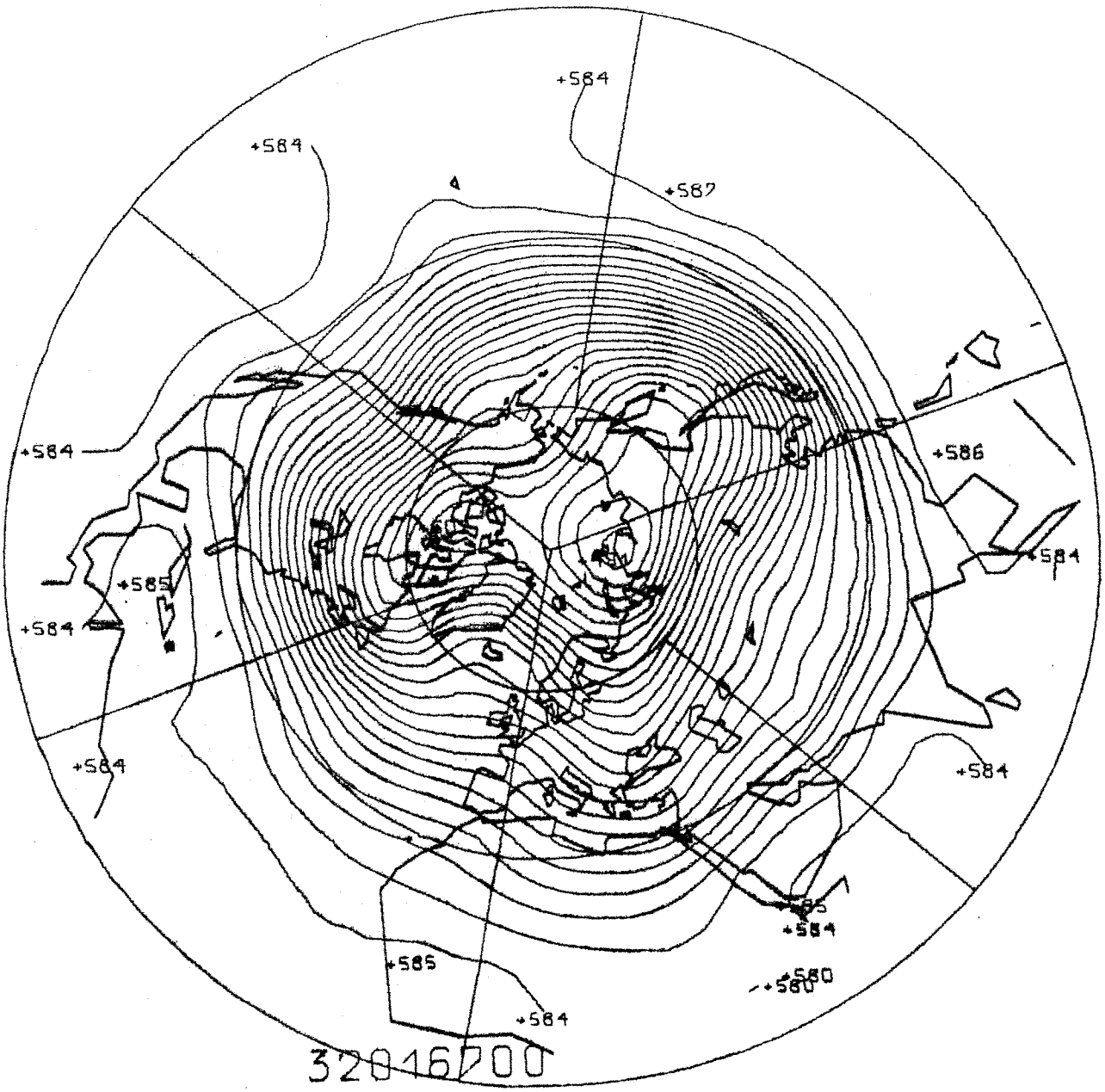


FIG.2

$[T]_{(t)}$ 300mb JAN. 1967

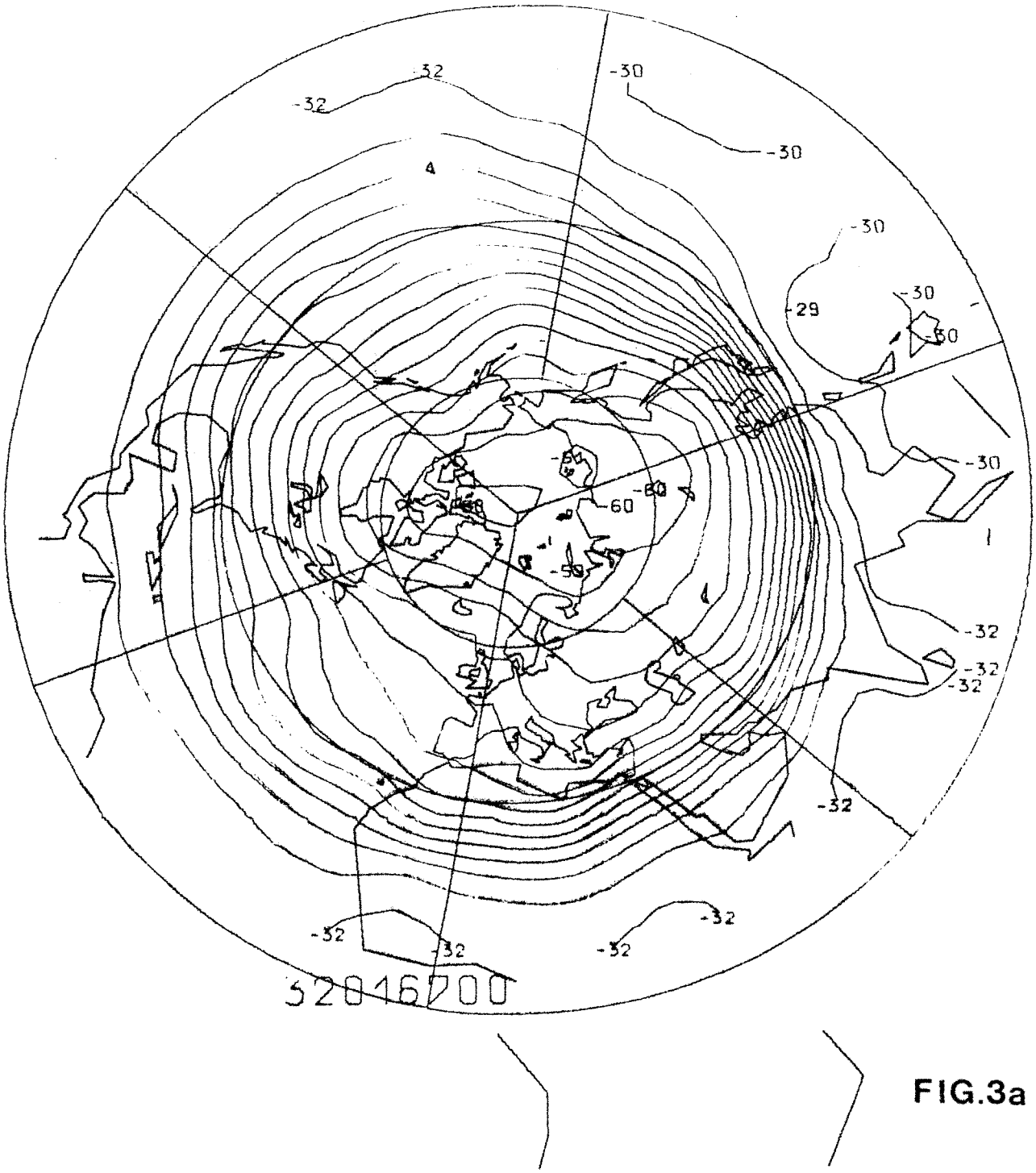


FIG.3a

$[\phi]_{(t)}$ 300mb JAN. 1967

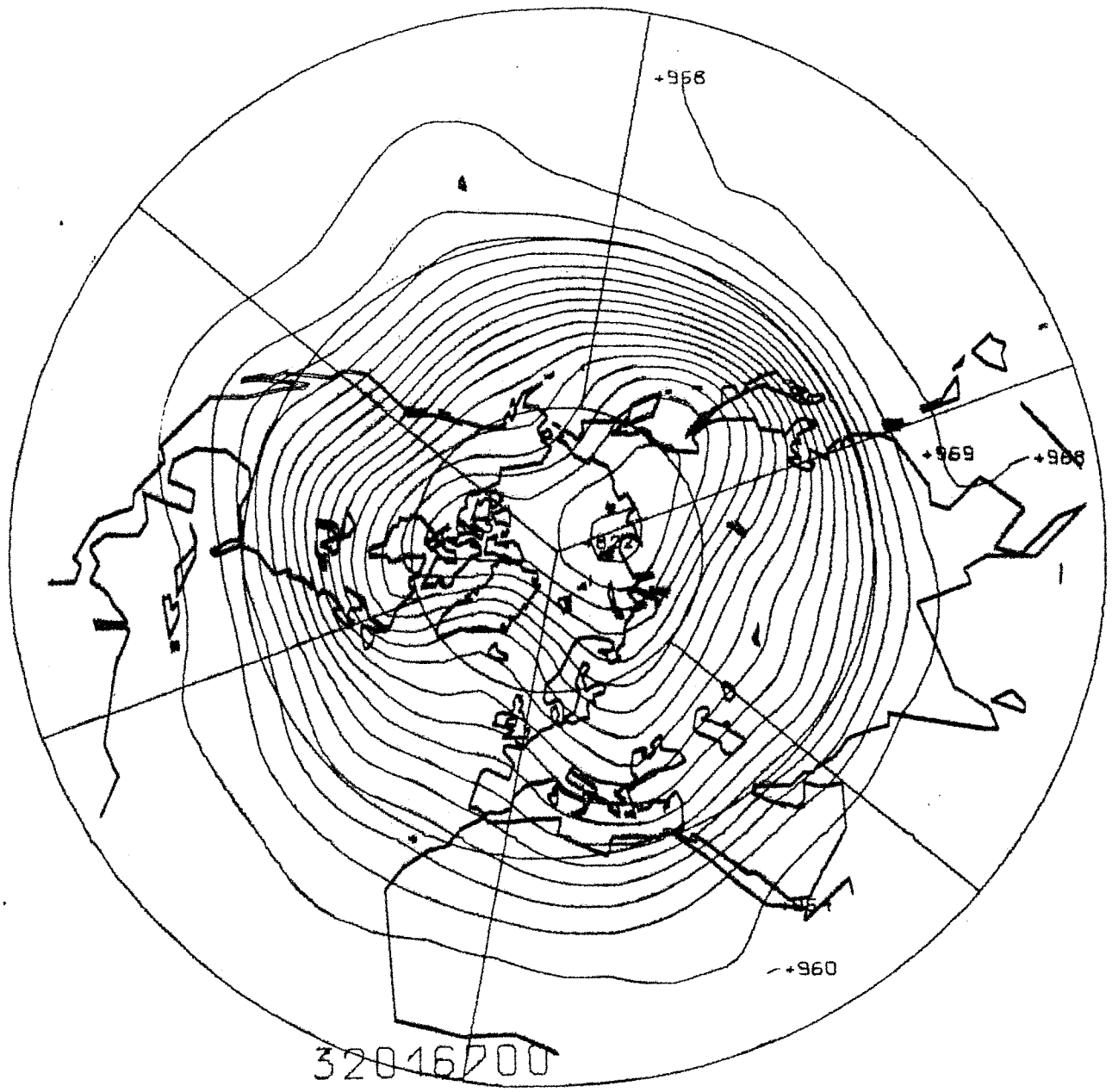


FIG. 3b

$[T]_{(t)}$ 850mb JAN. 1968

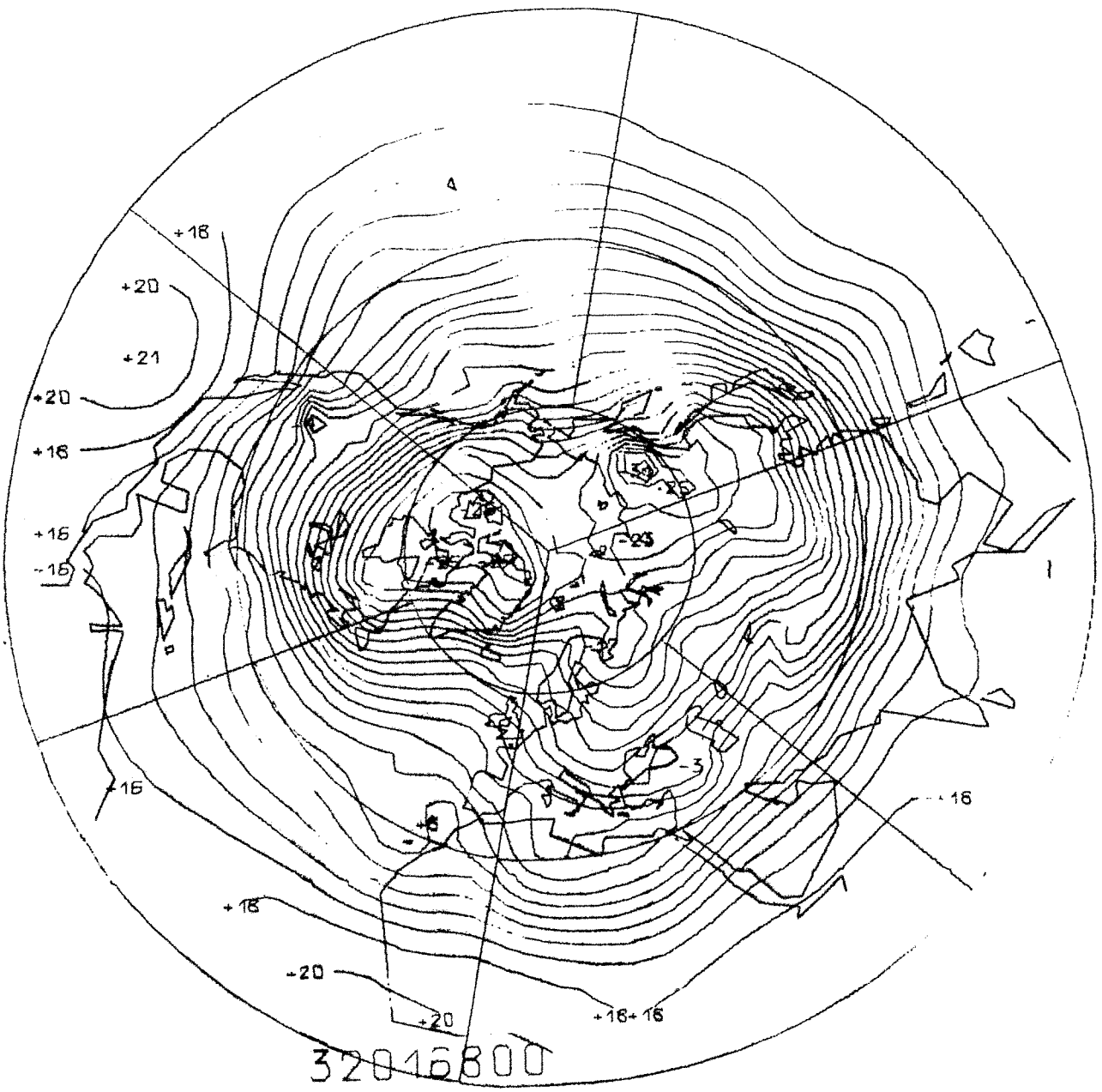
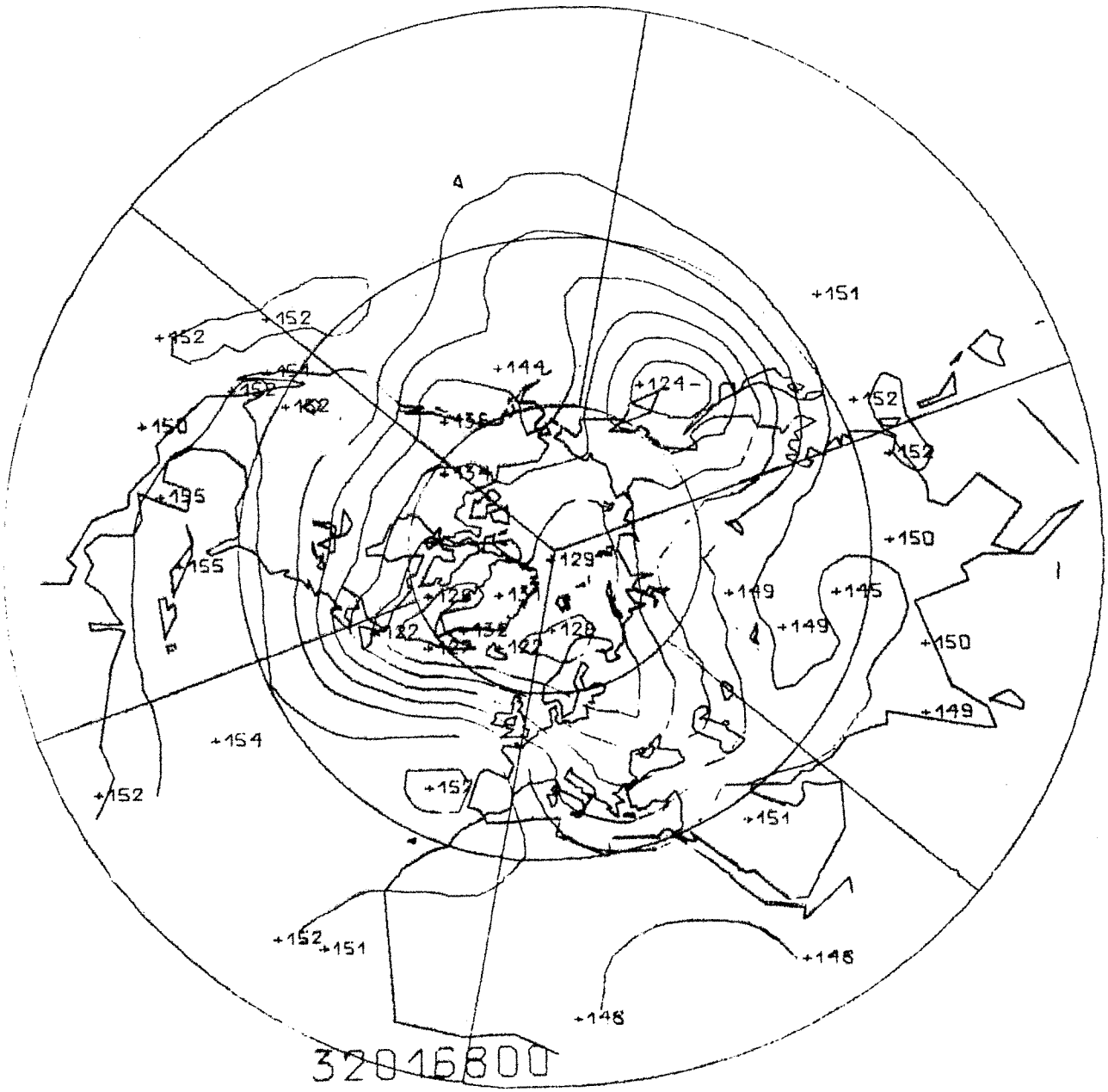


FIG.4a

$[\phi]_{(t)}$ 850mb JAN. 1968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$[\phi]_{(t)}$ 500 mb JAN. 1968

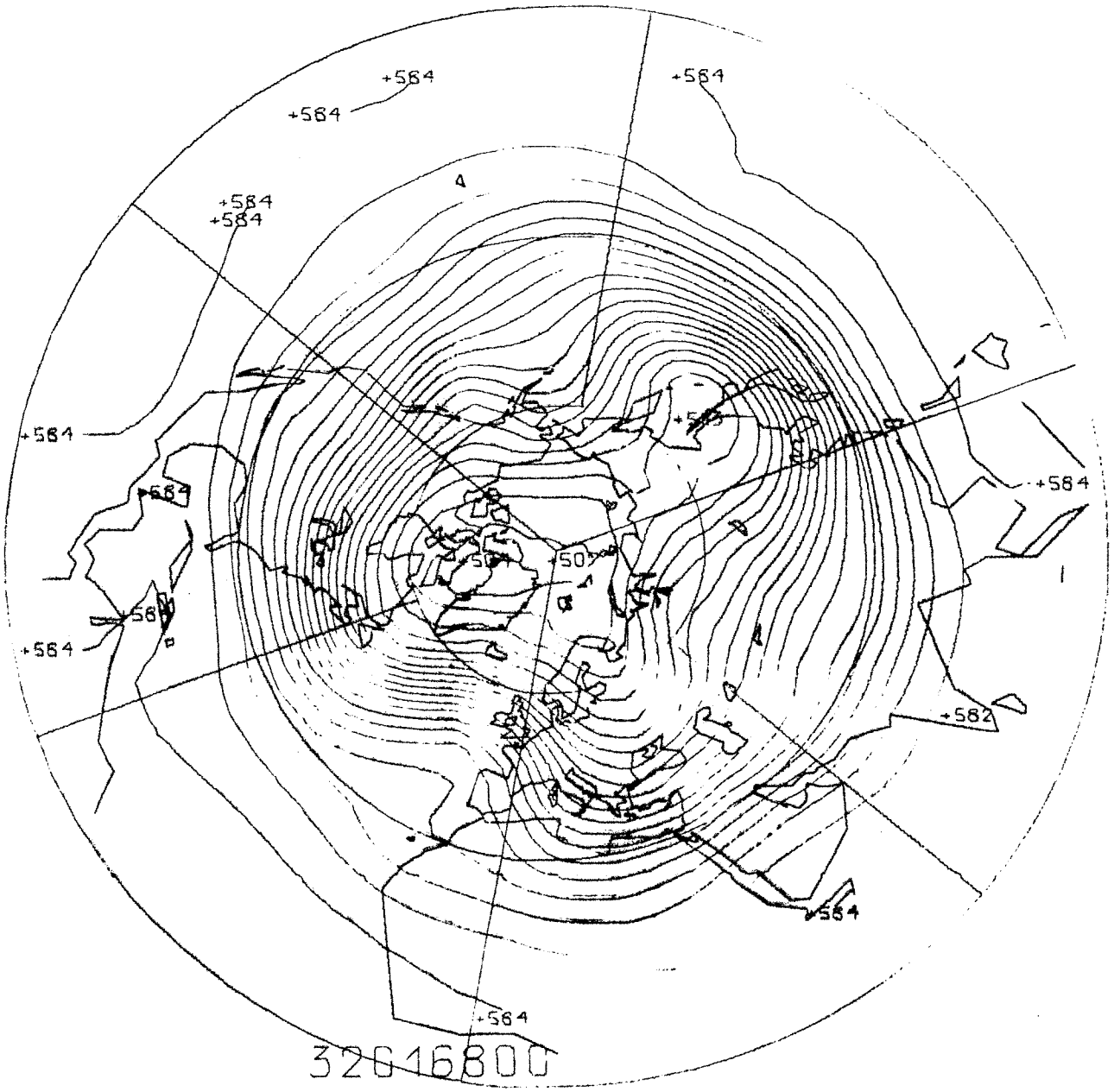


FIG. 5

$[T]_{(t)}$ 300mb JAN. 1968

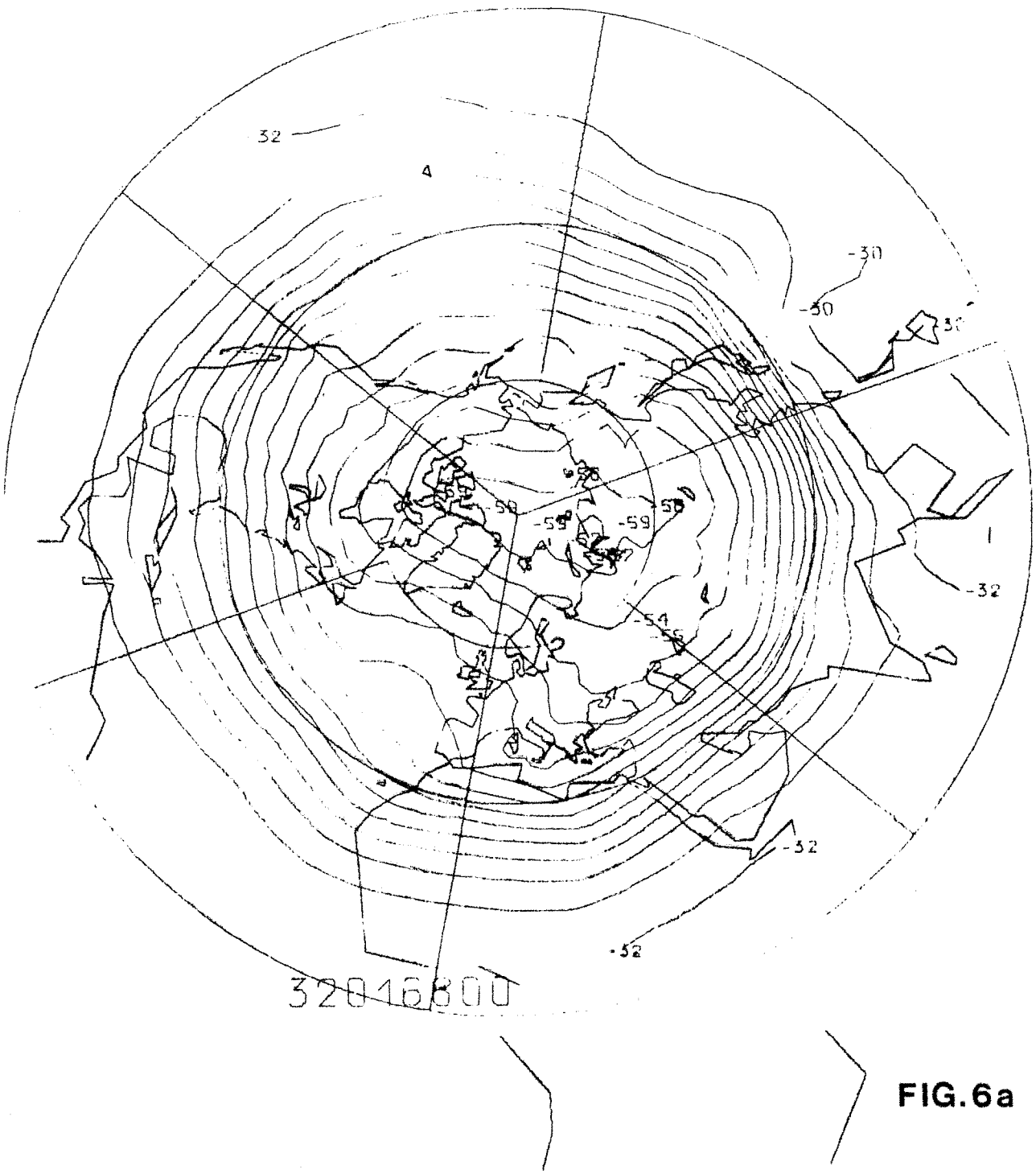


FIG.6a

$[\phi]_{(t)}$ 300 mb JAN. 1968

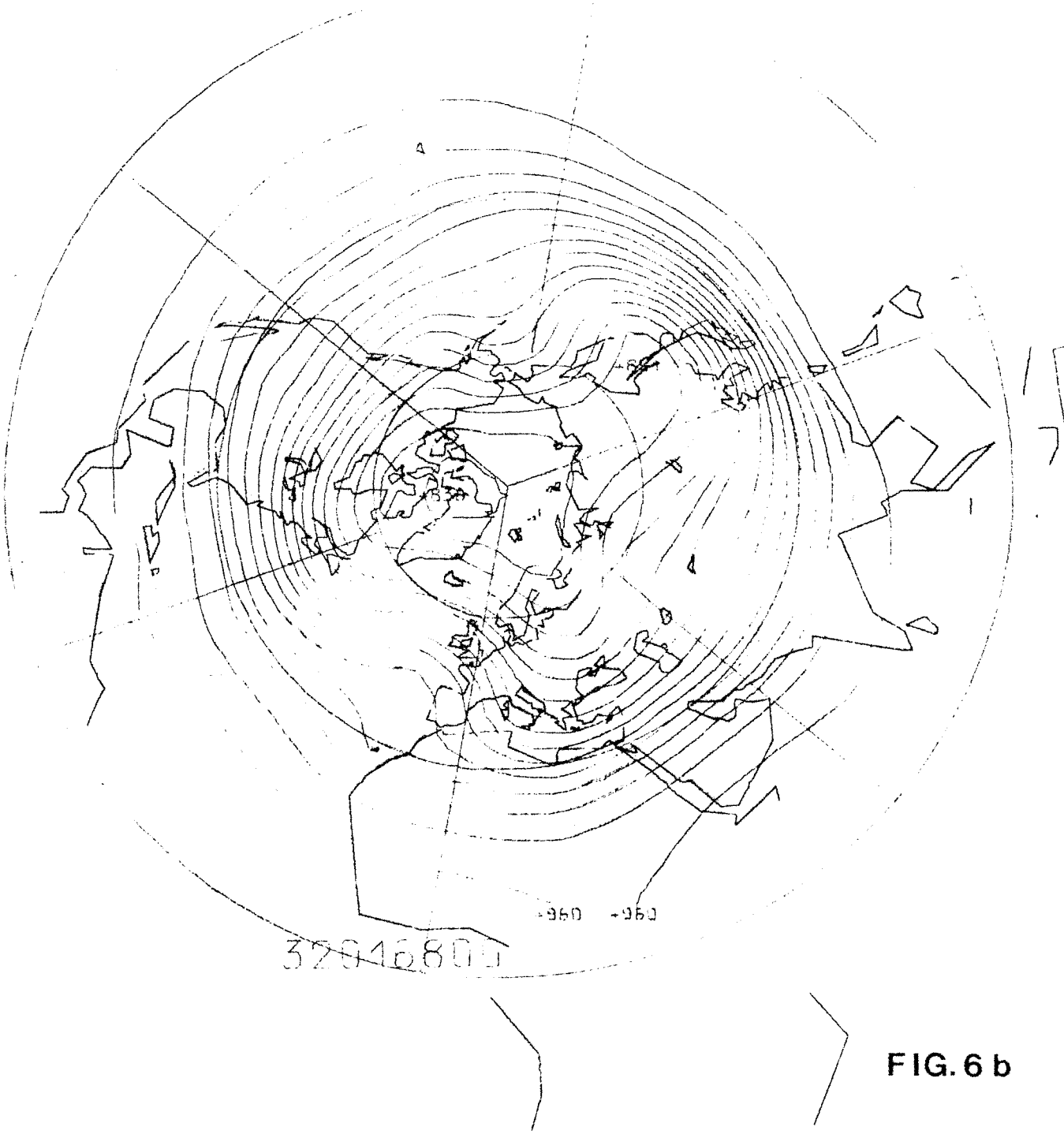


FIG. 6 b

$[T]_{(t)}$ 100mb JAN. 1968

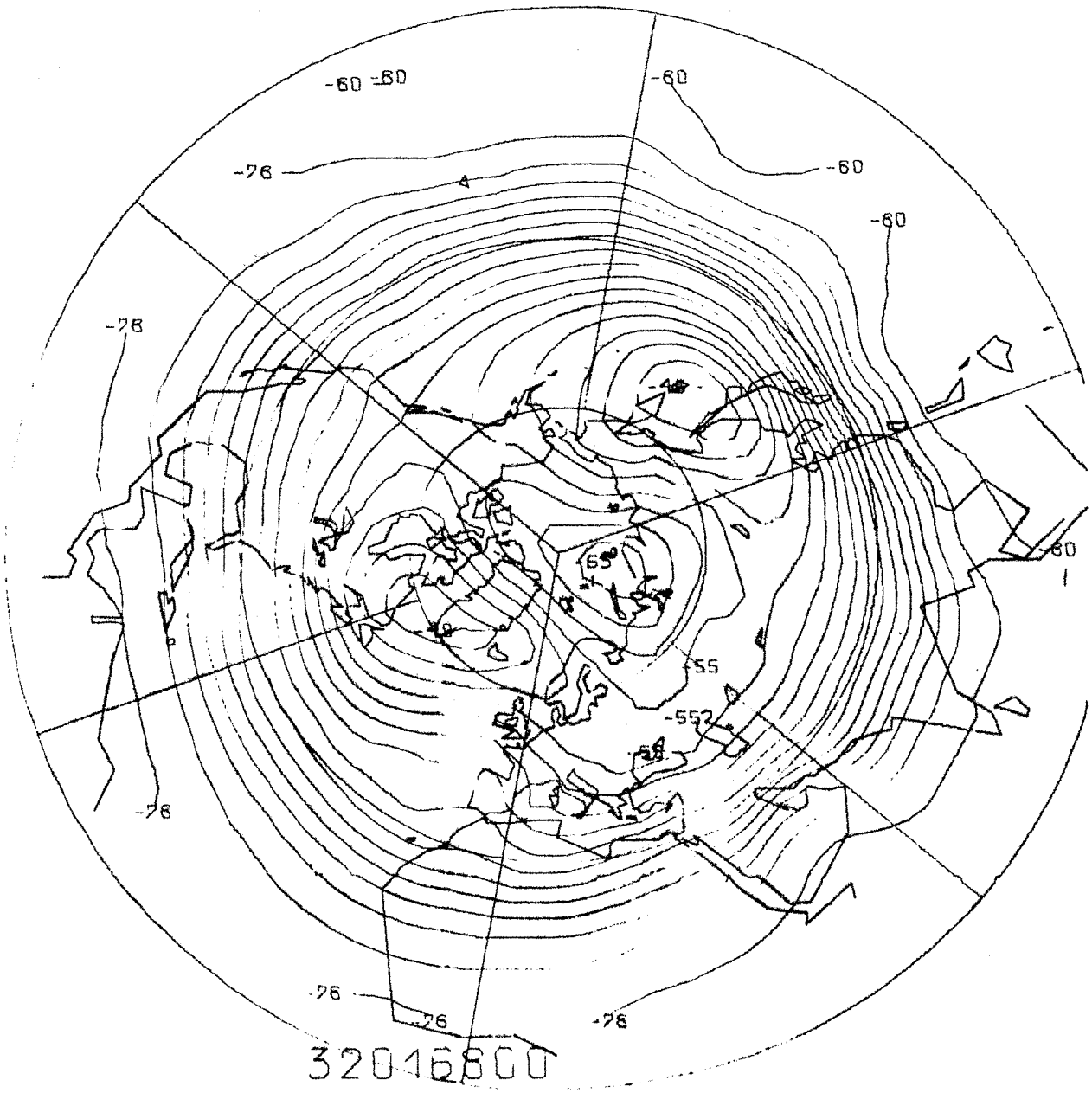


FIG.7a

$[\phi]_{(t)}$ 100mb JAN. 1968

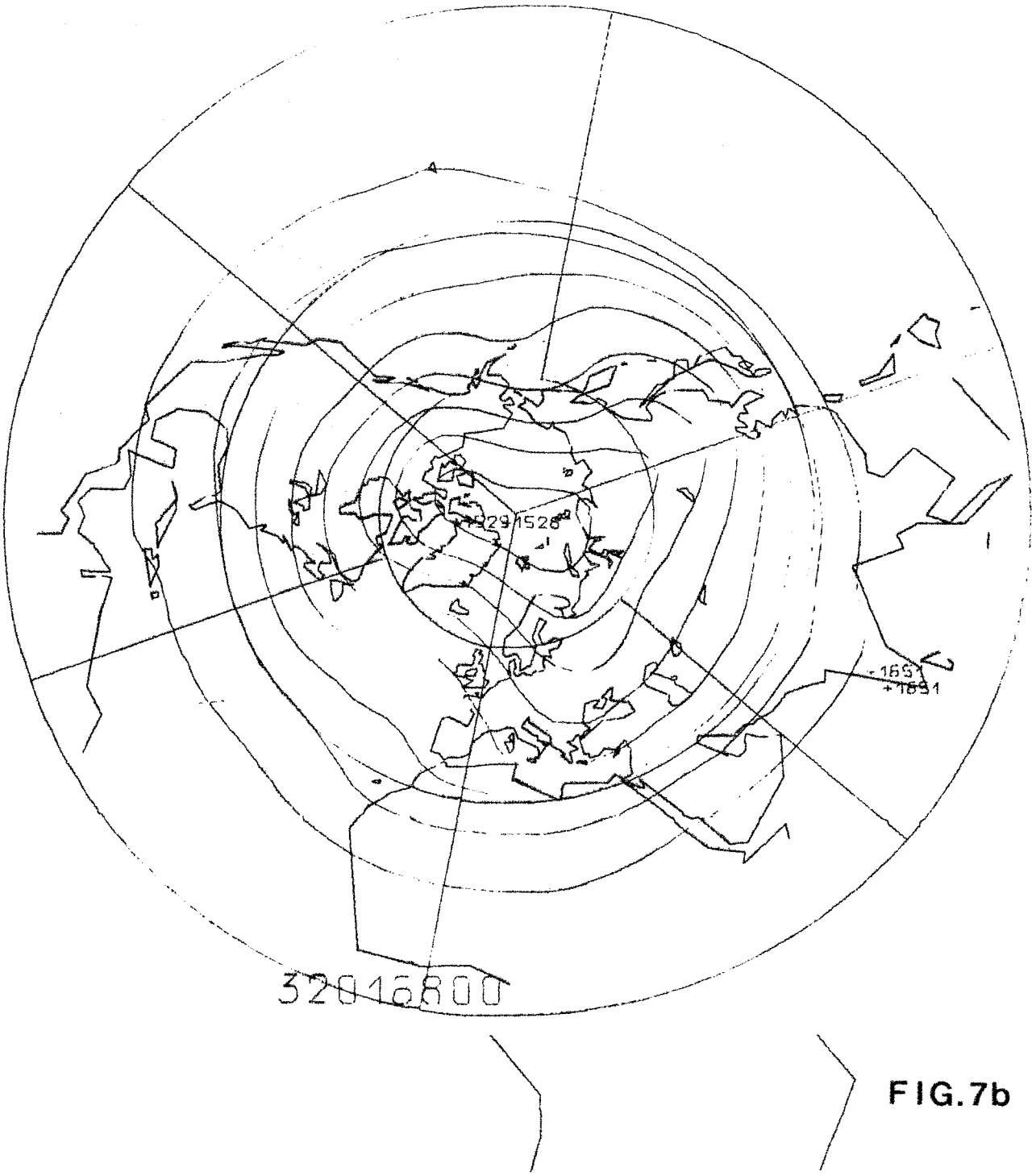
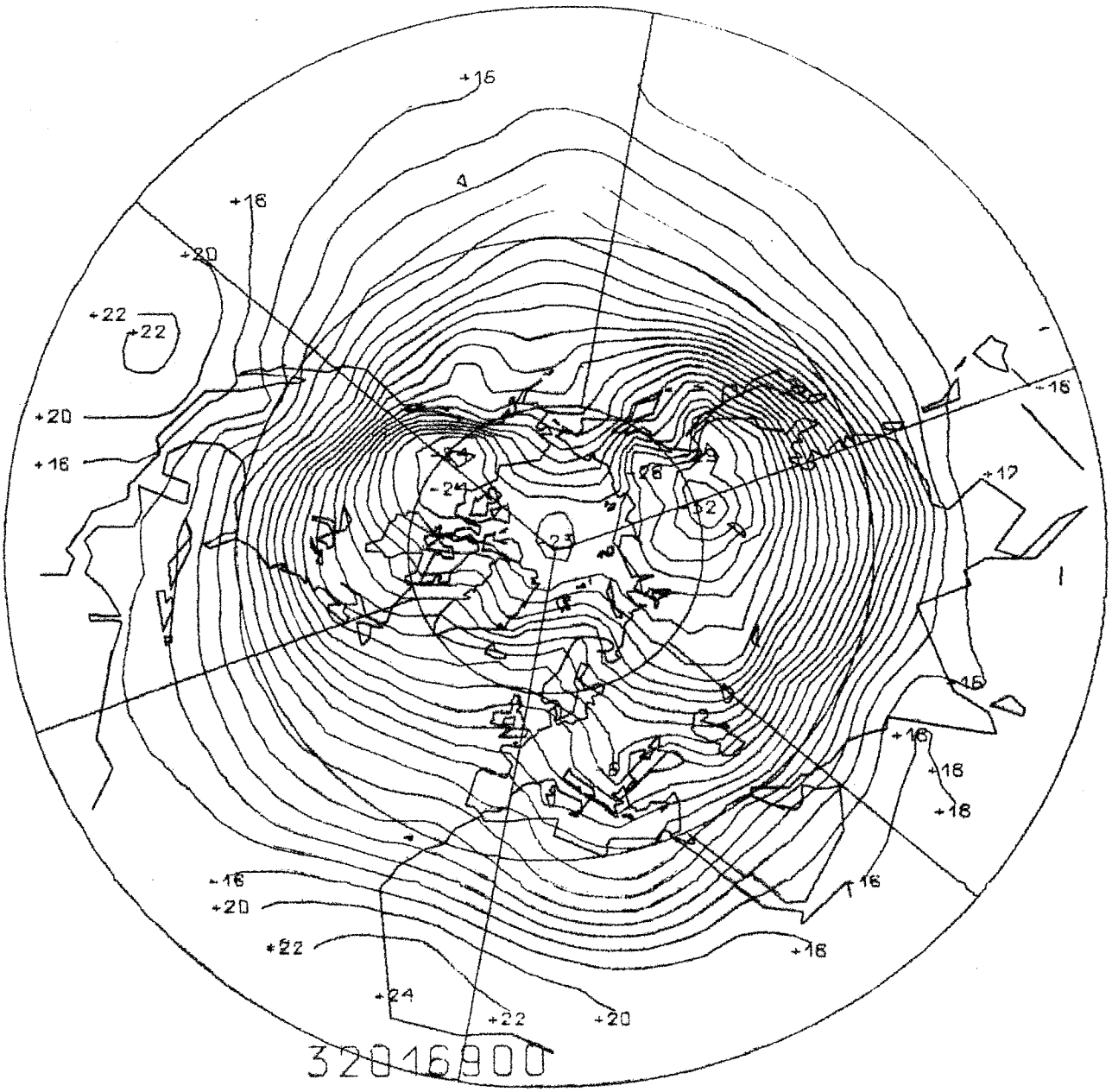


FIG.7b

$[T]_{(t)}$ 850 mb JAN. 1969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$[\phi]_{(t)}$ 850 mb JAN. 1969

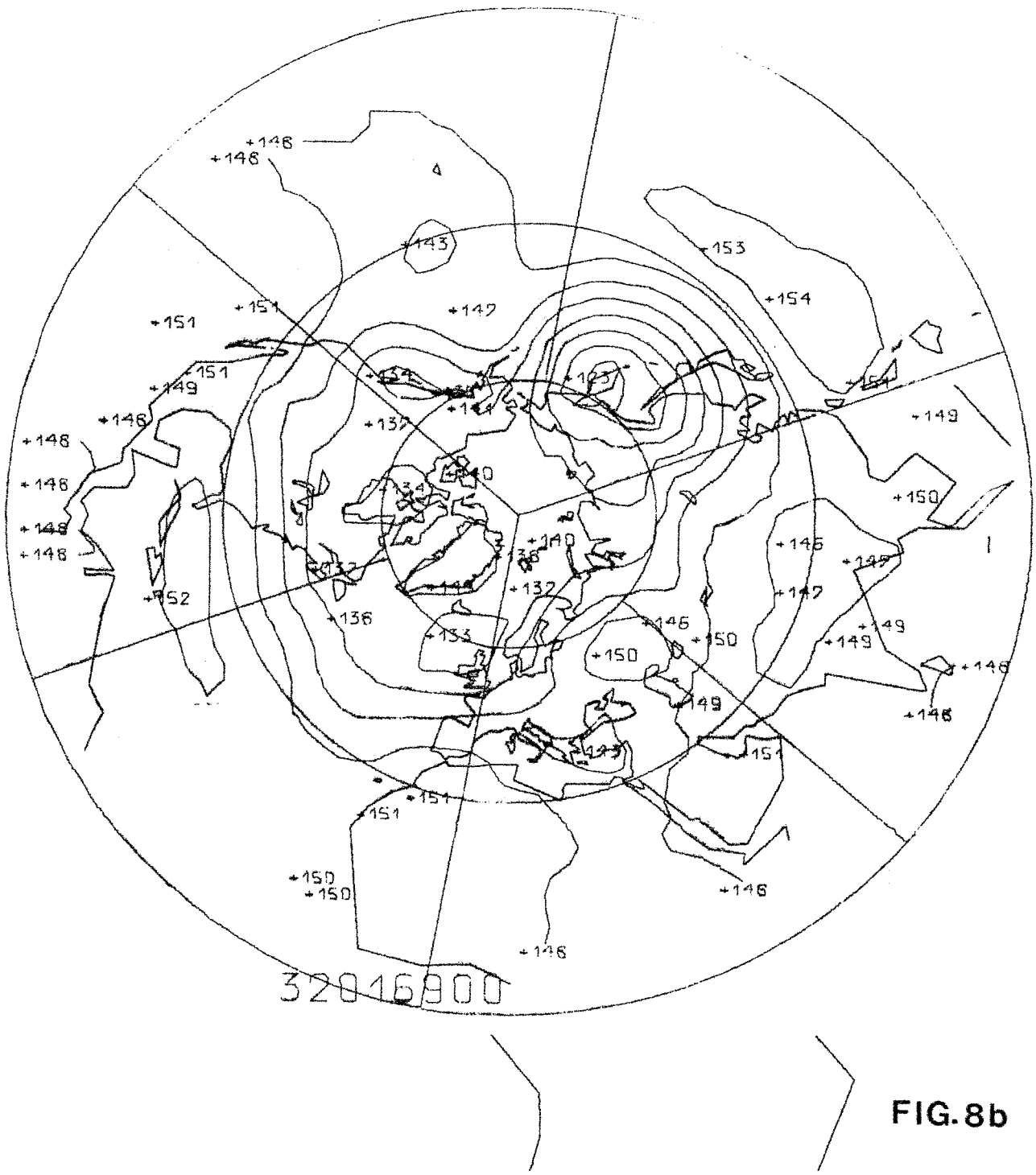


FIG. 8b

$[\phi]_{(t)}$ 500mb JAN. 1969

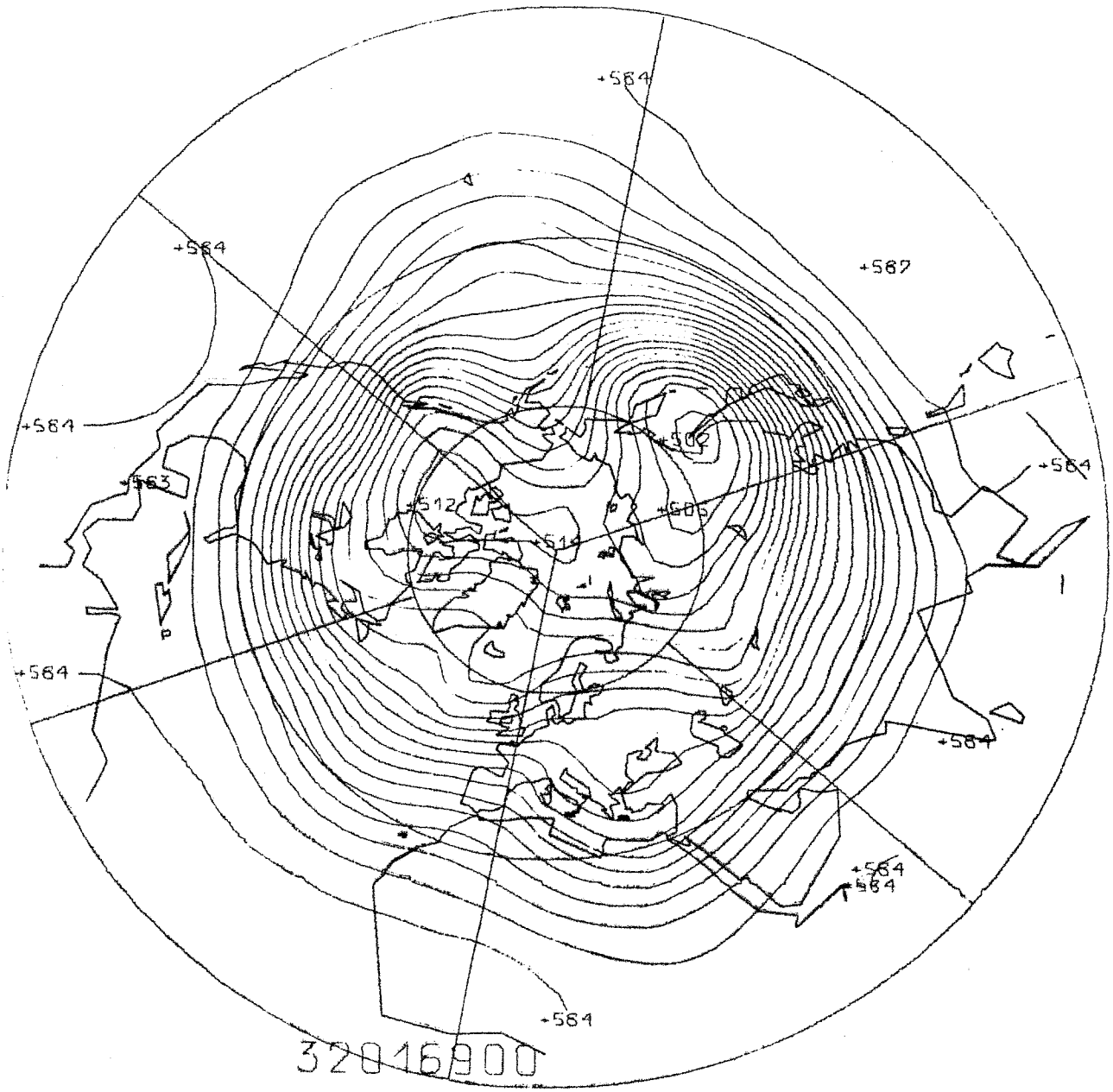


FIG.9

$[T]_{(t)}$ 300mb JAN. 1969

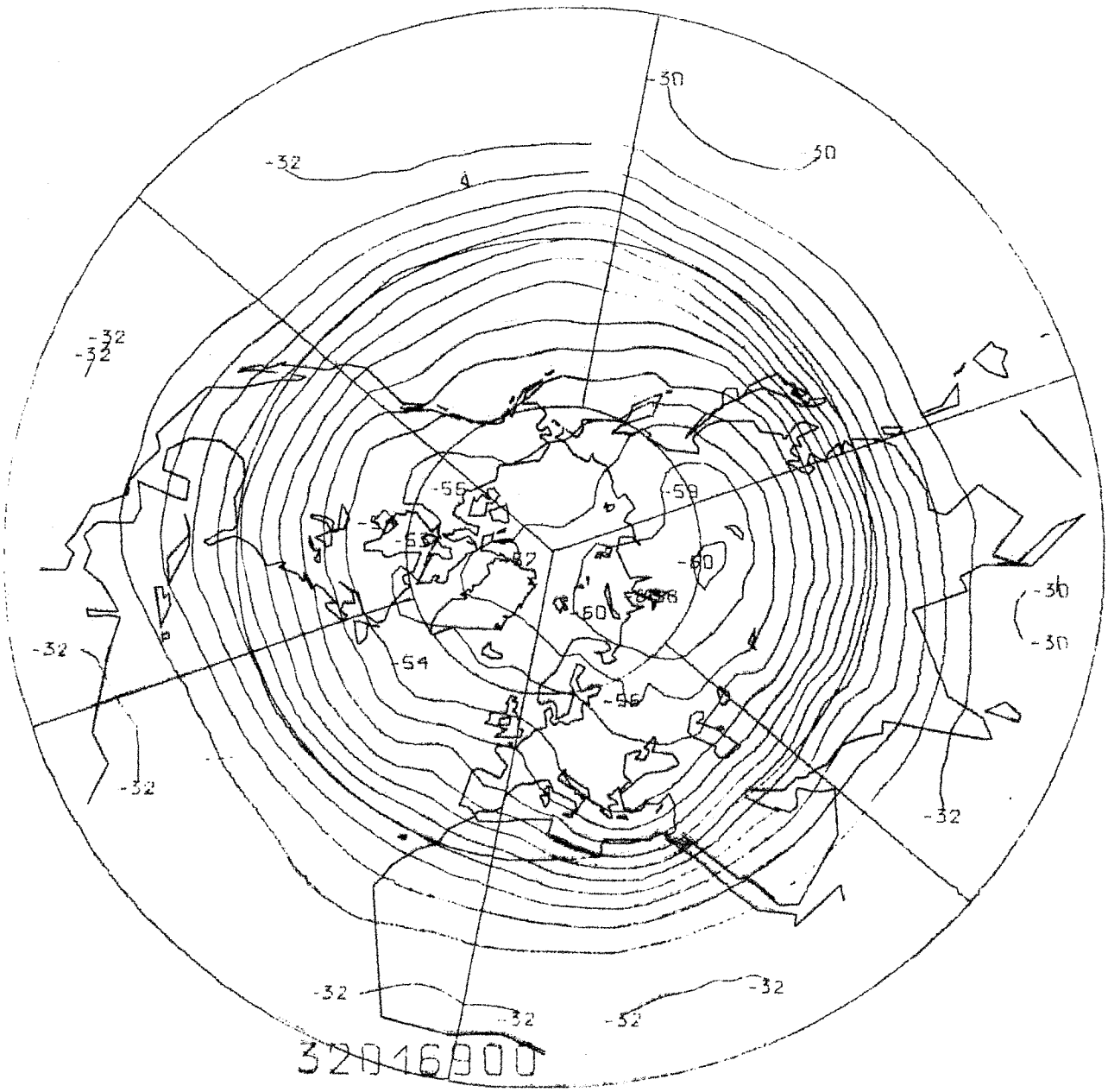


FIG. 10a

$[\phi]_{(t)}$ 300 mb JAN. 1969

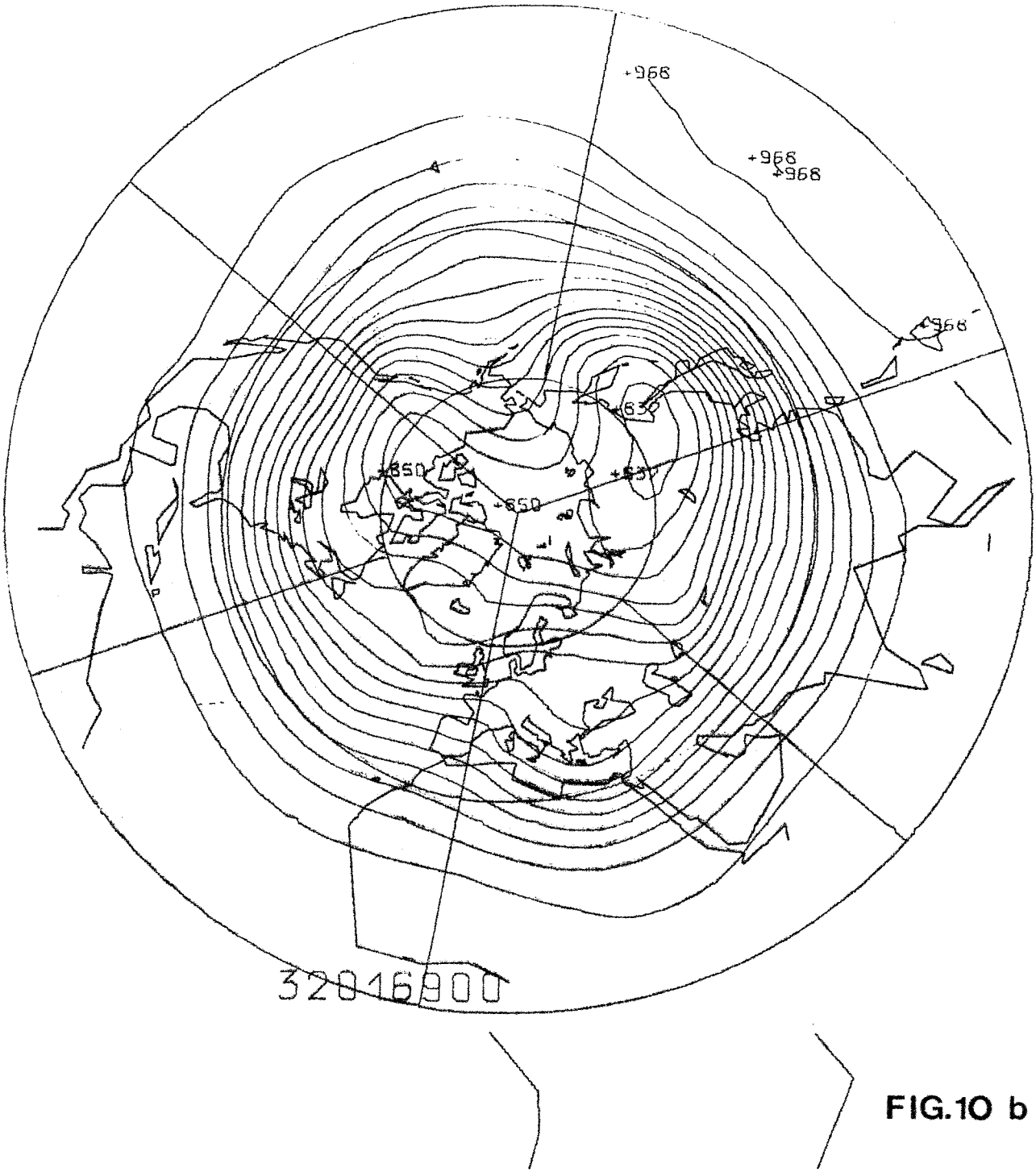


FIG.10 b

$[T]_{(t)}$ 100 mb JAN. 1969

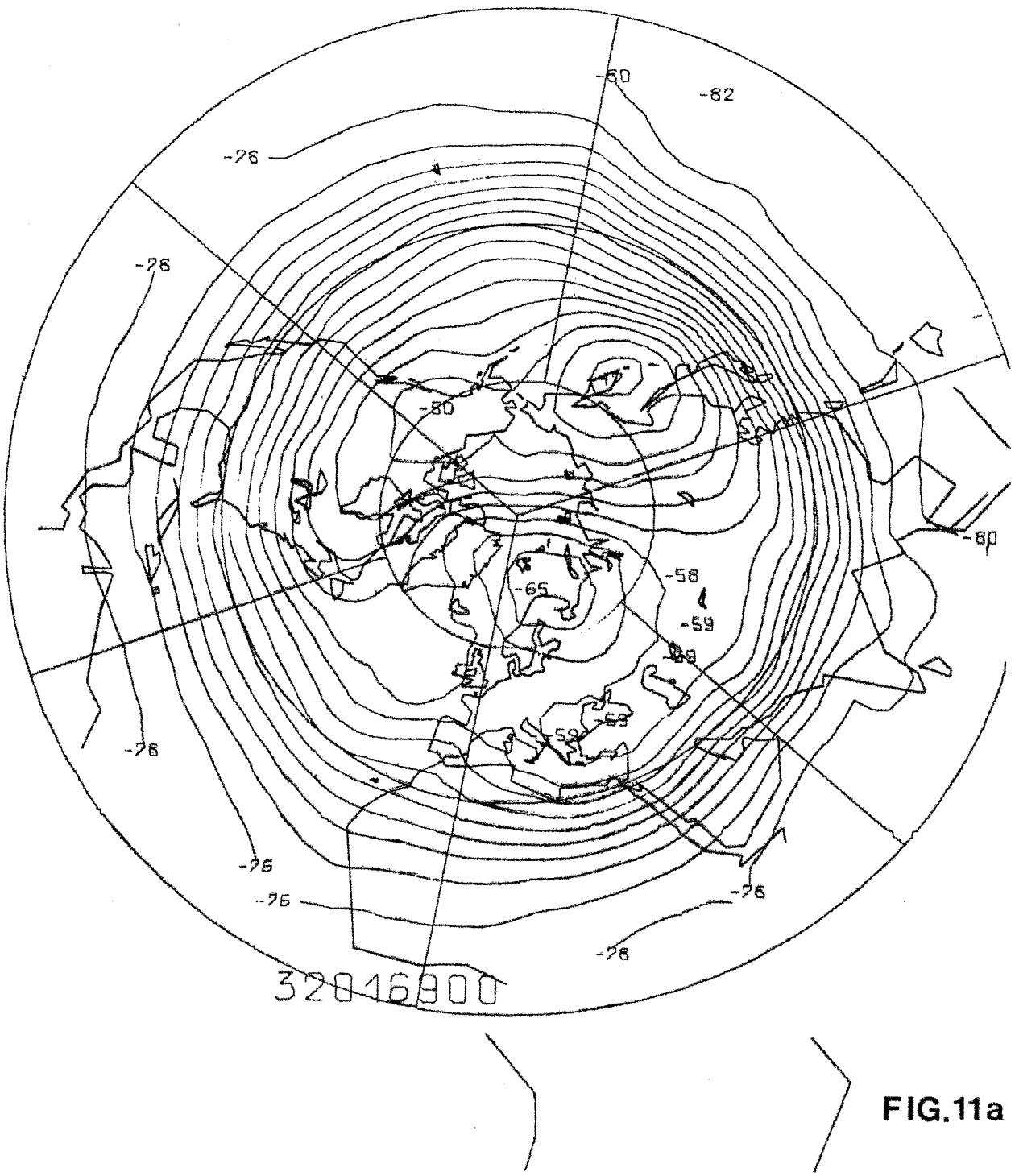


FIG.11a

$[\phi]_{(t)}$ 100mb JAN. 1969

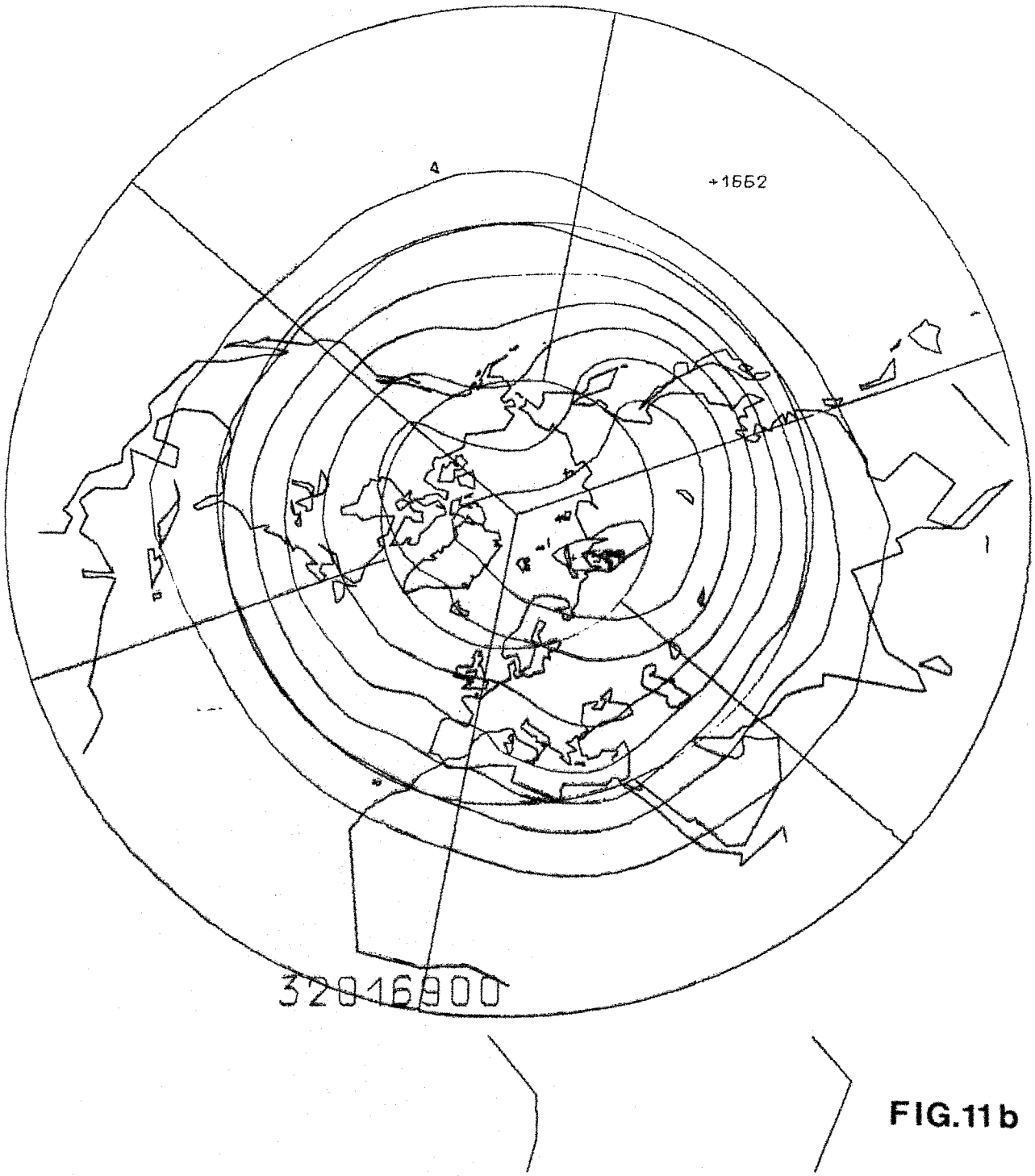


FIG.11b

$[T]_{(t)}$ 850mb JAN. 1970

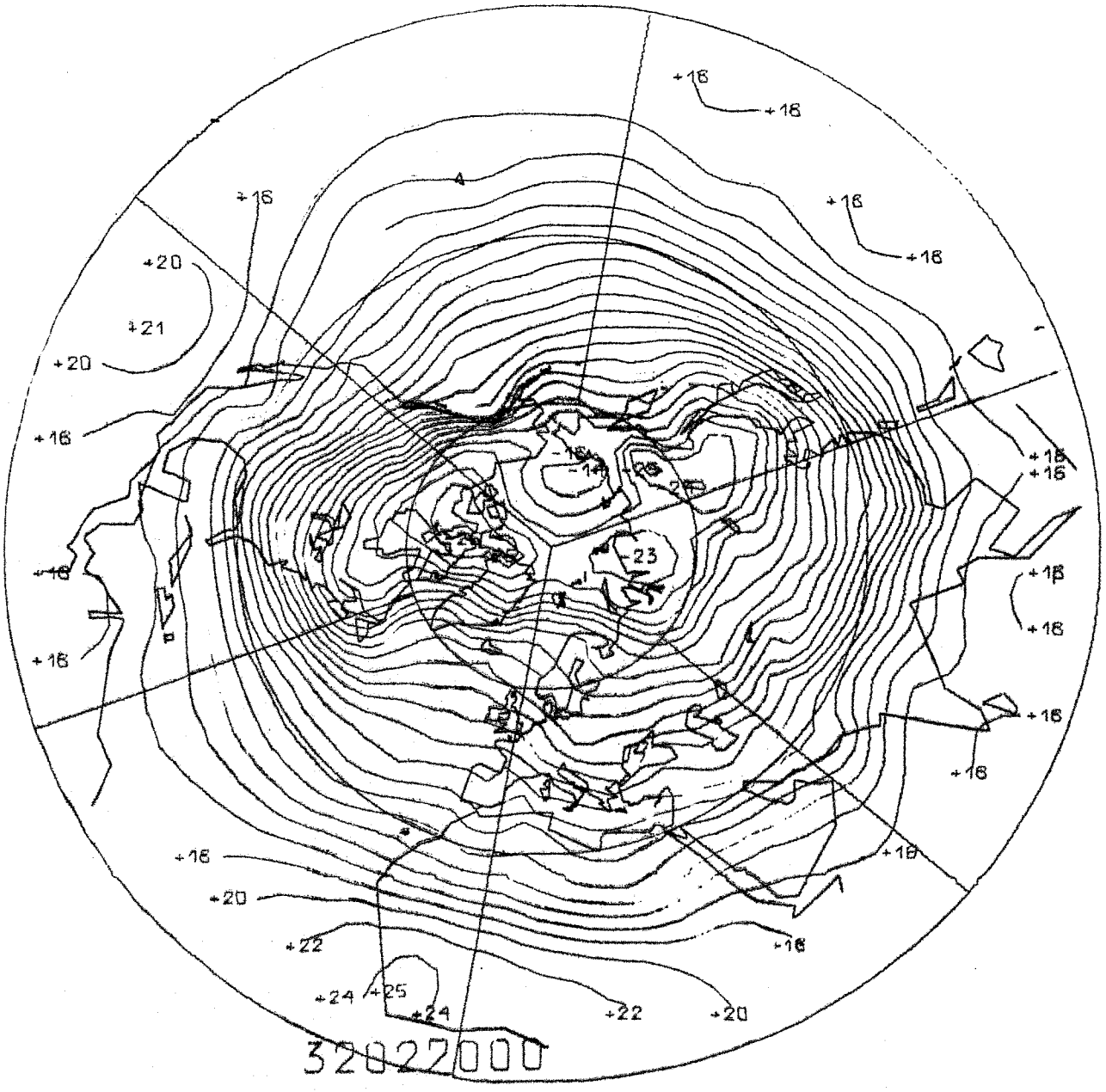


FIG. 12a

$[\phi]_{(t)}$ 850 mb JAN. 1970

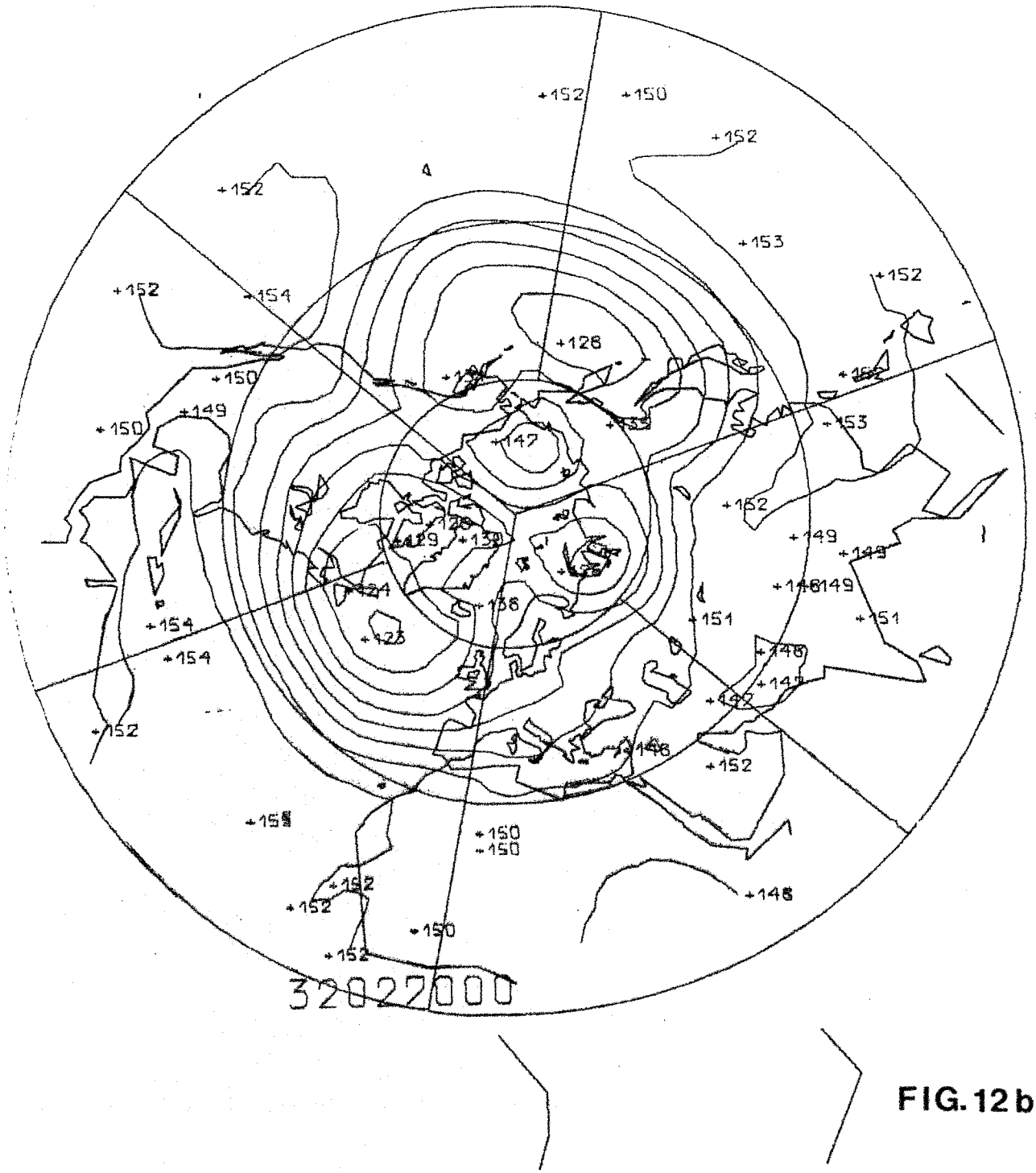


FIG. 12b

$[\phi]_{(t)}$ 500mb JAN. 1970

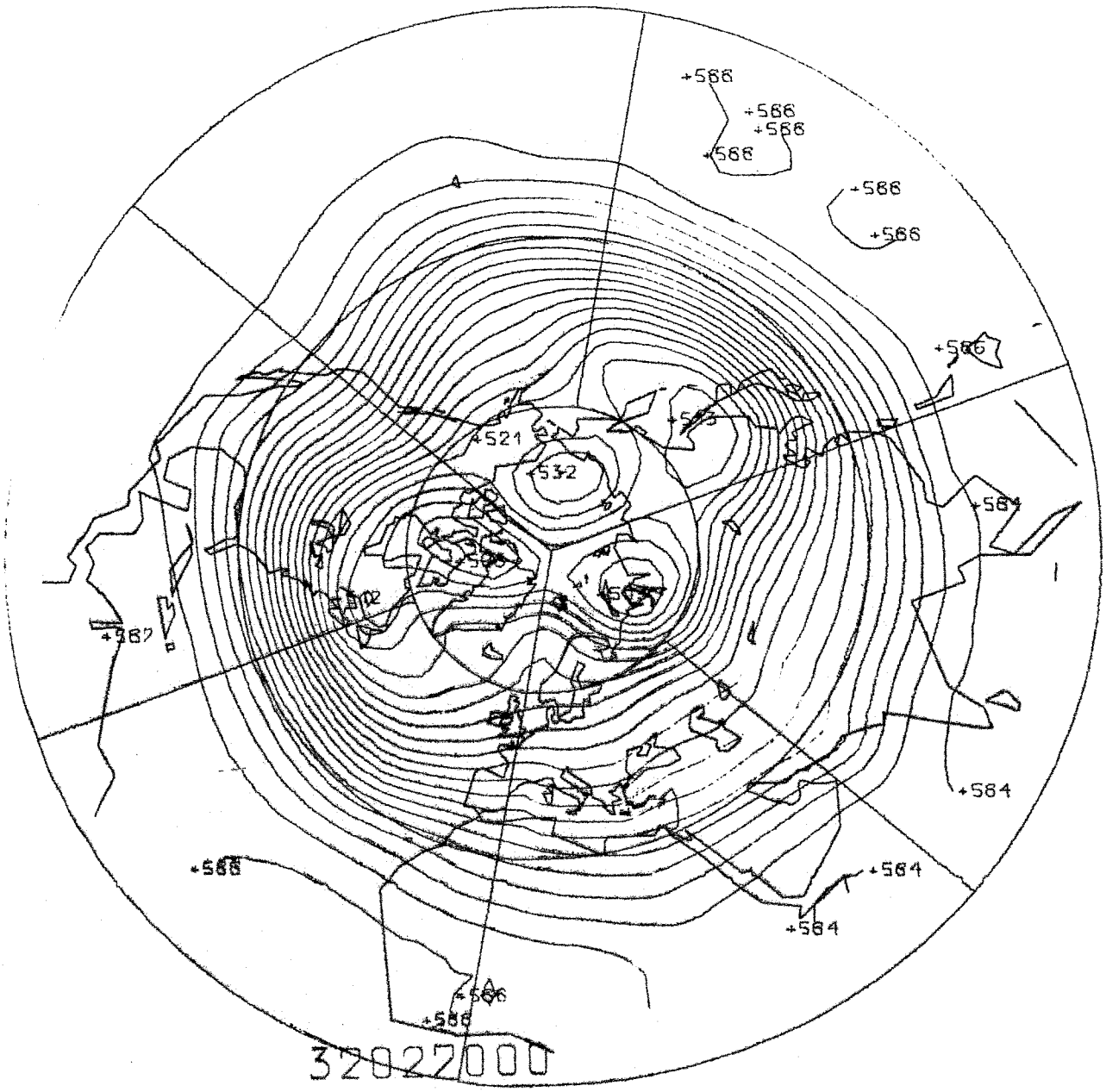


FIG. 13

$[T]_{(t)}$ 300 mb JAN. 1970

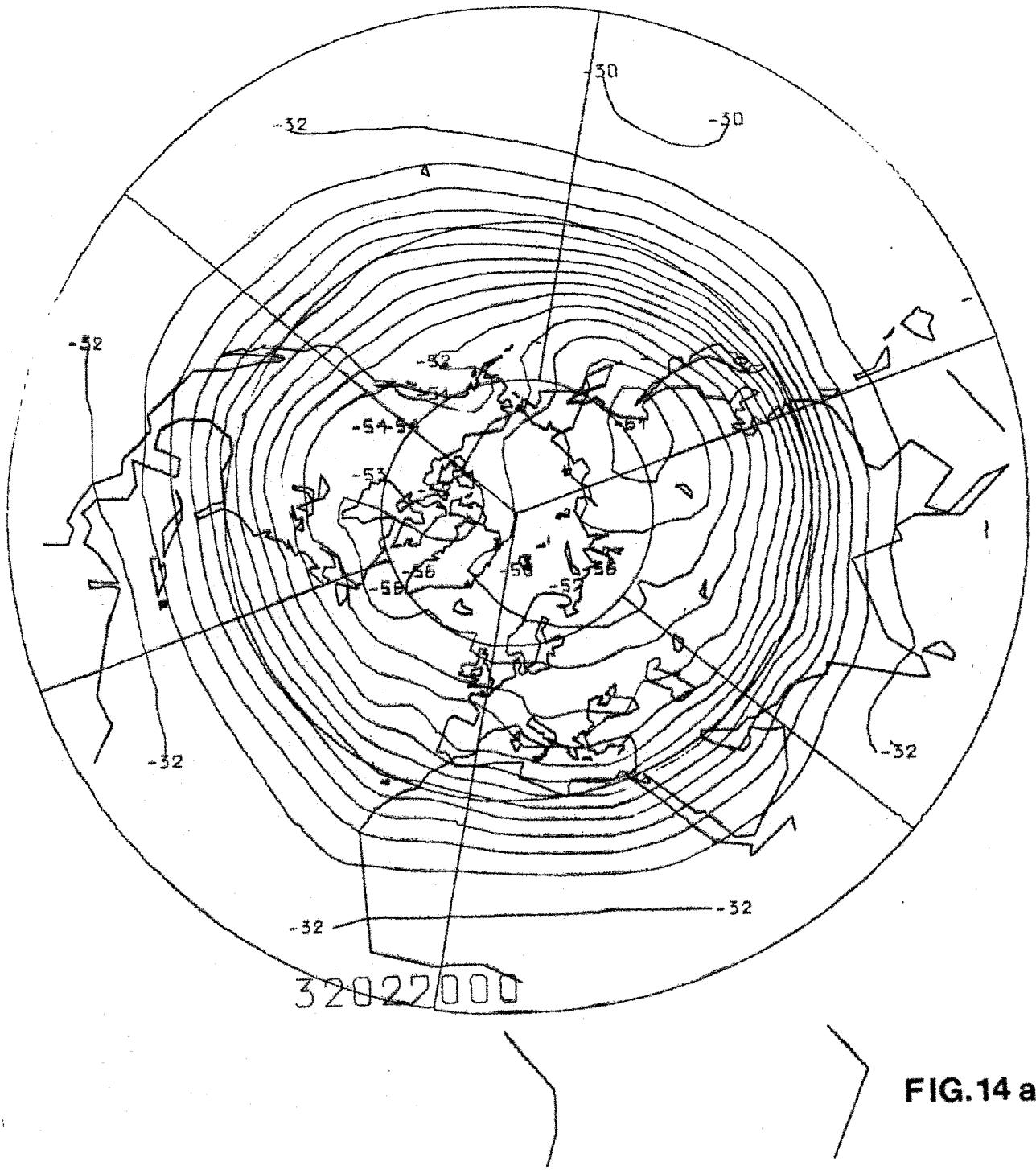
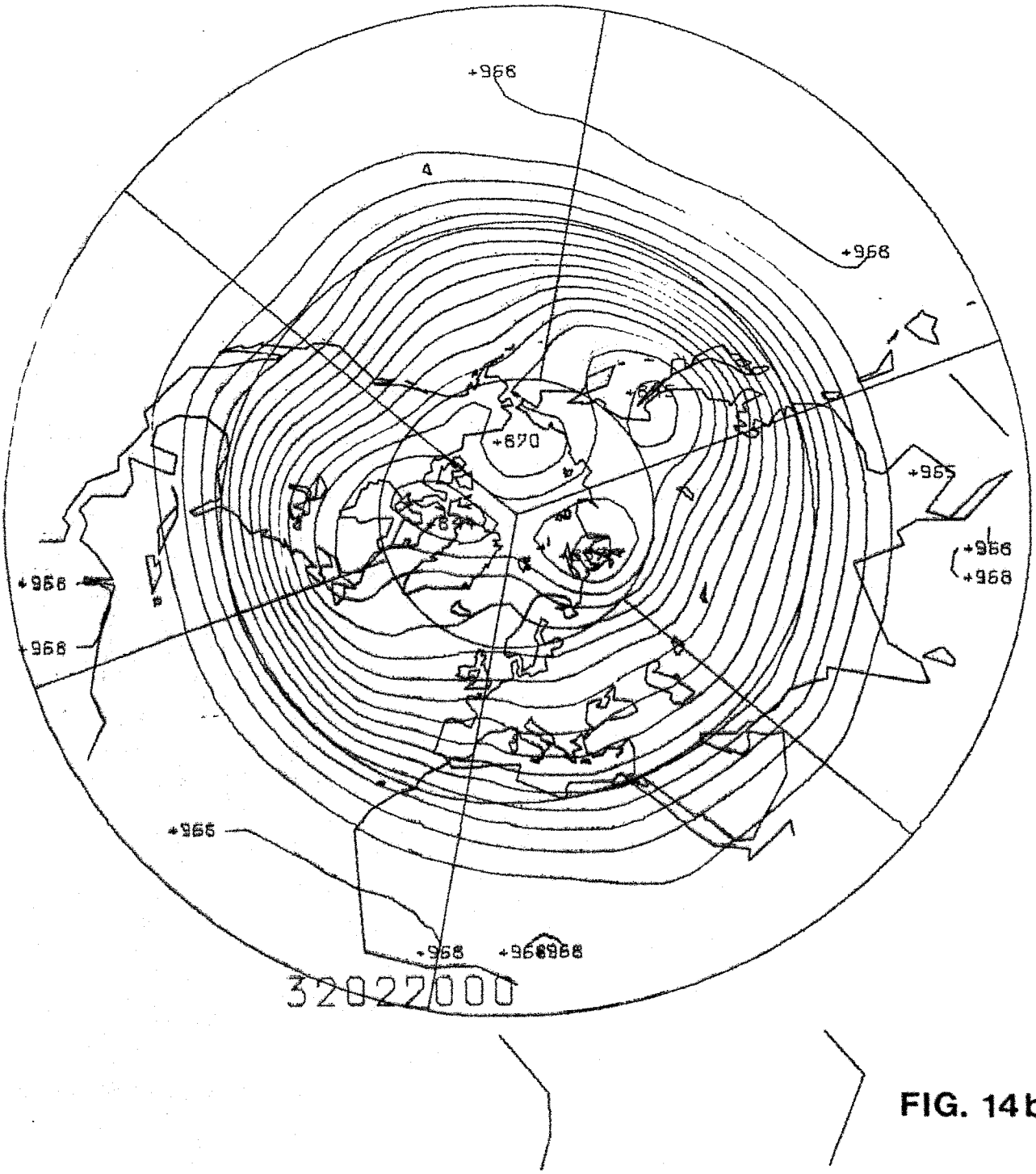


FIG. 14 a

$[\phi]_{(t)}$ 300 mb JAN. 1970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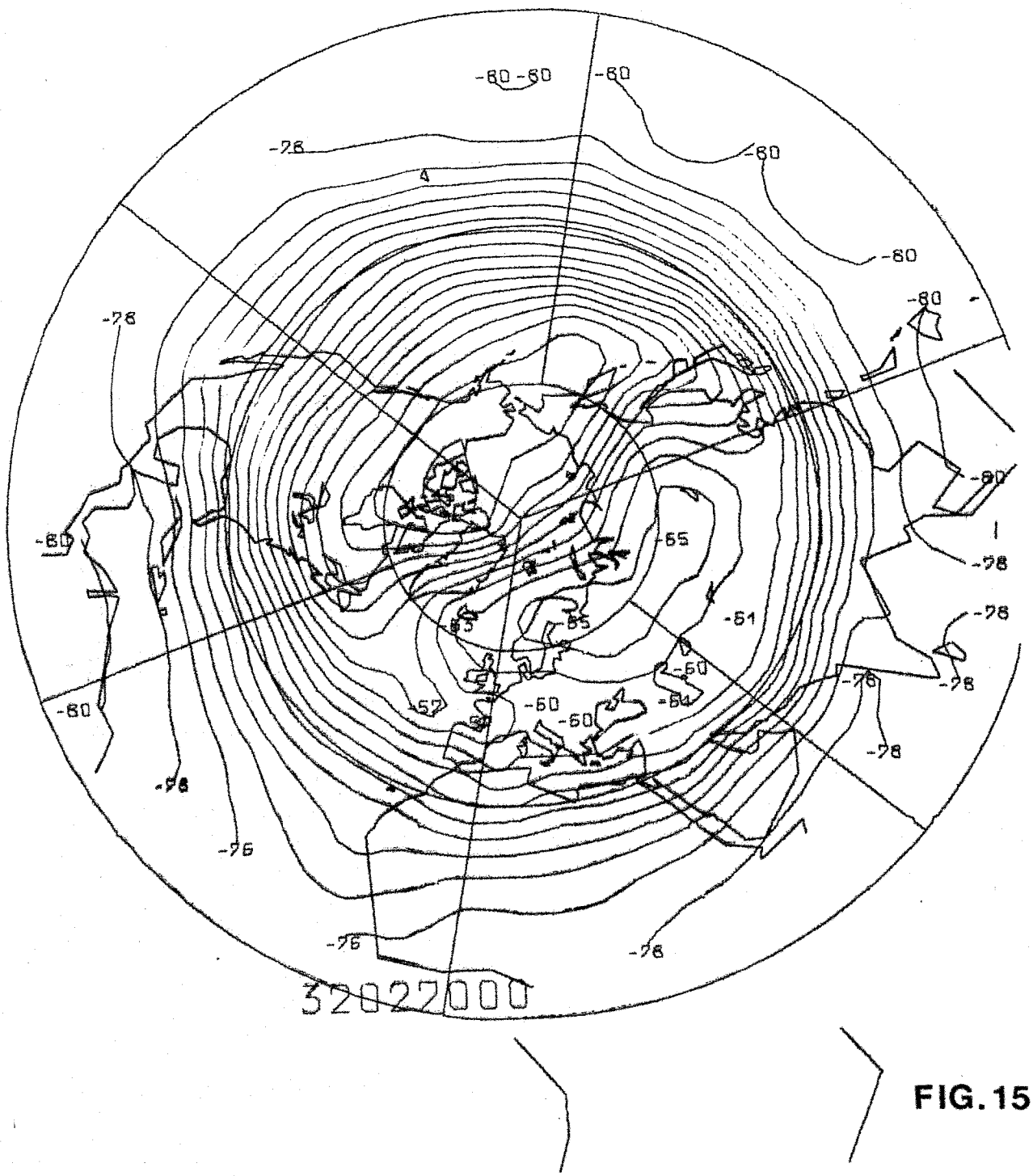
$[T]_{(t)}$ 100mb JAN. 1970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$[\phi]_{(t)}$ 100 mb JAN. 1970

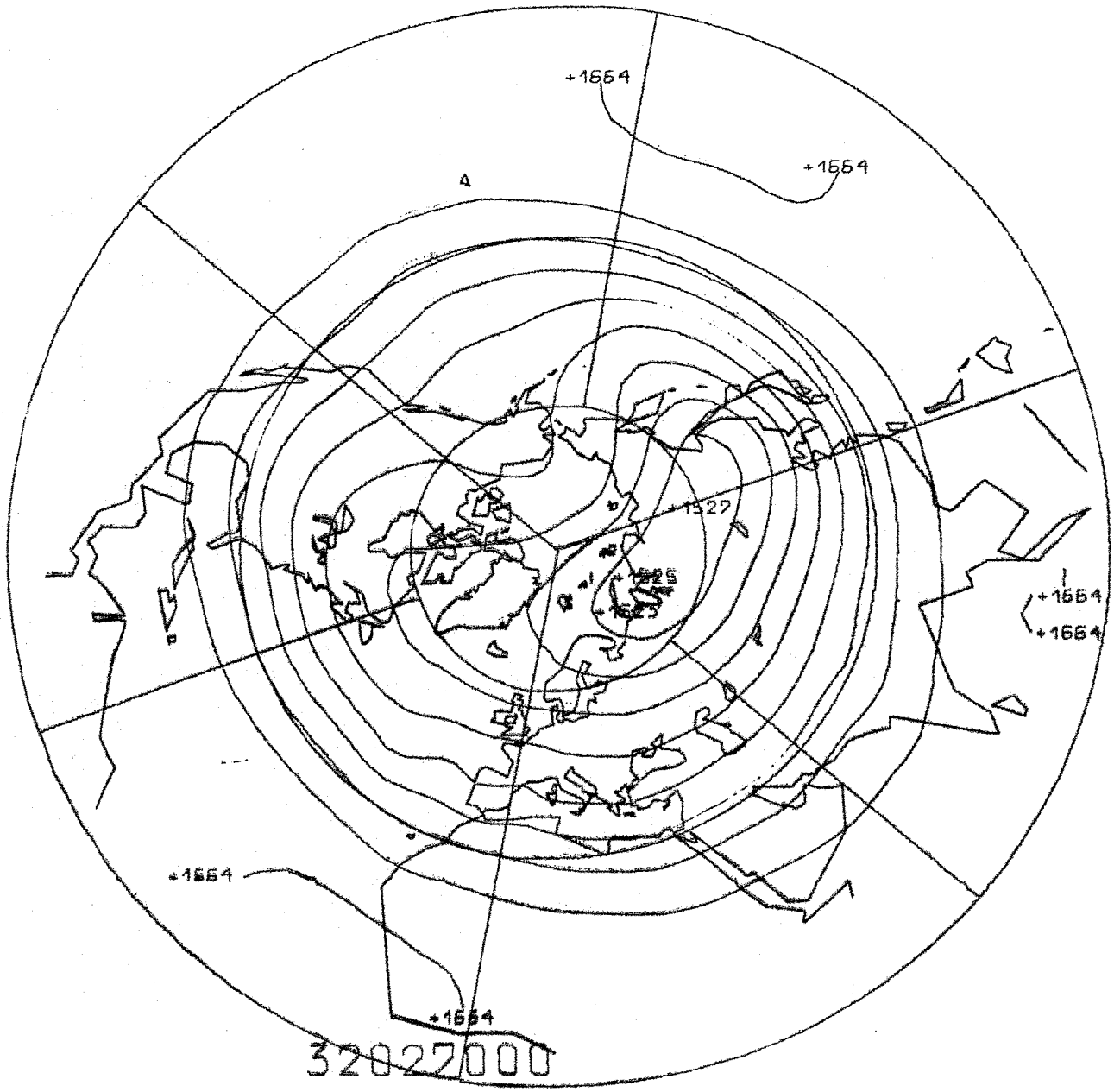


FIG.15b

$[T]_{(t)}$ 850 mb JAN. 1971

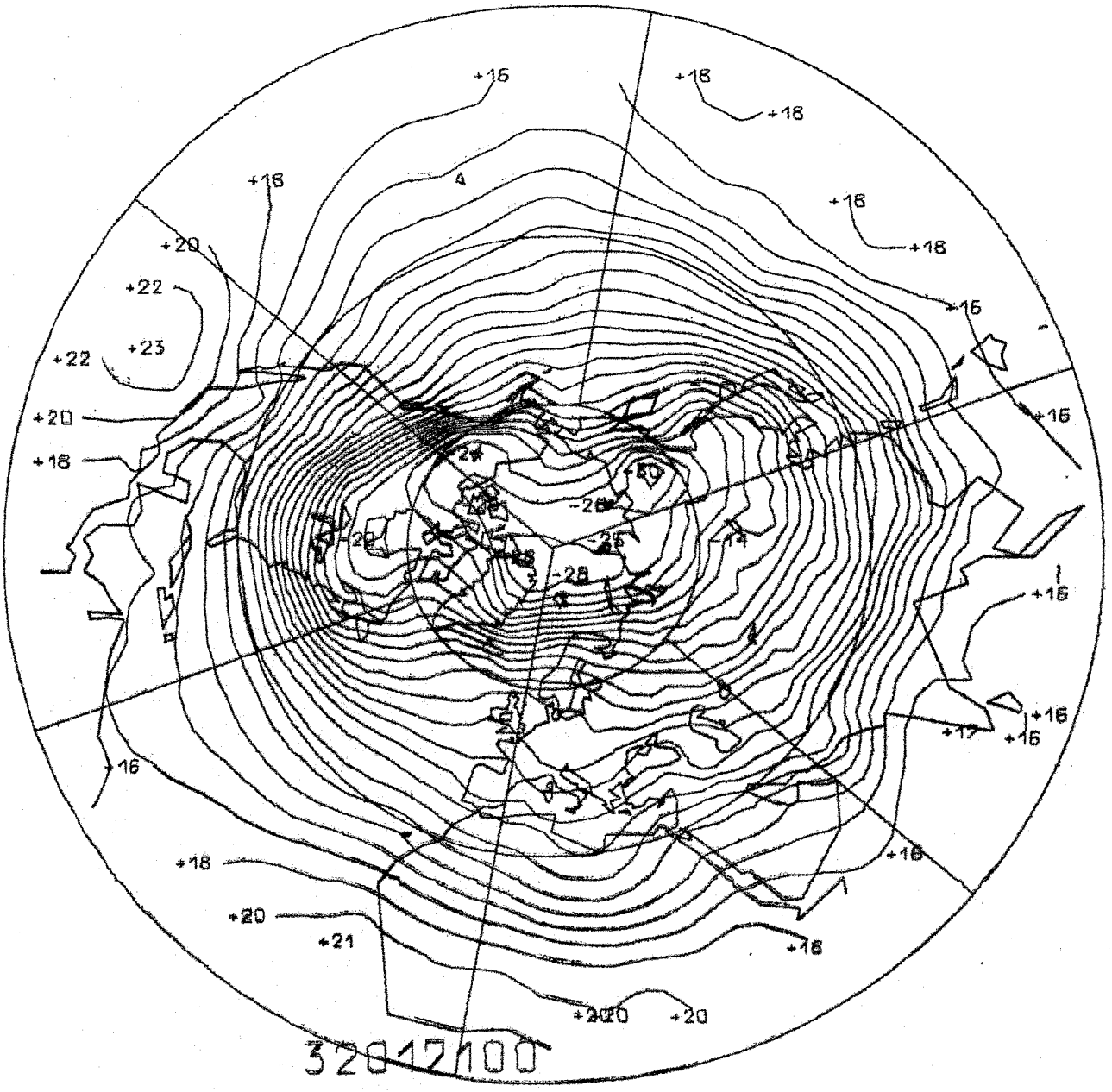


FIG.16 a

$[\phi]_{(t)}$ 850 mb JAN. 1971

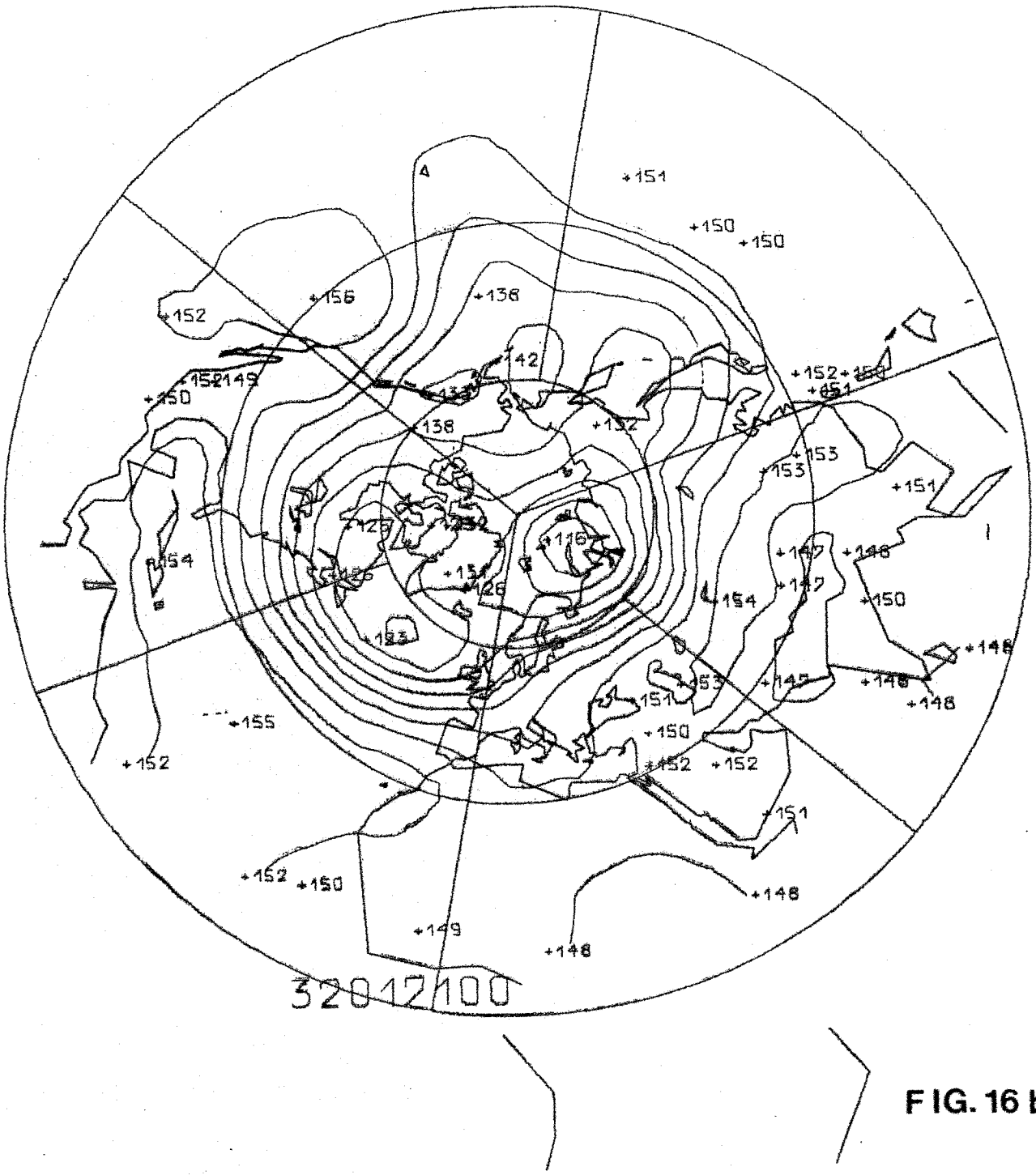


FIG. 16 b

$[\phi]_{(t)}$ 500 mb JAN. 1971

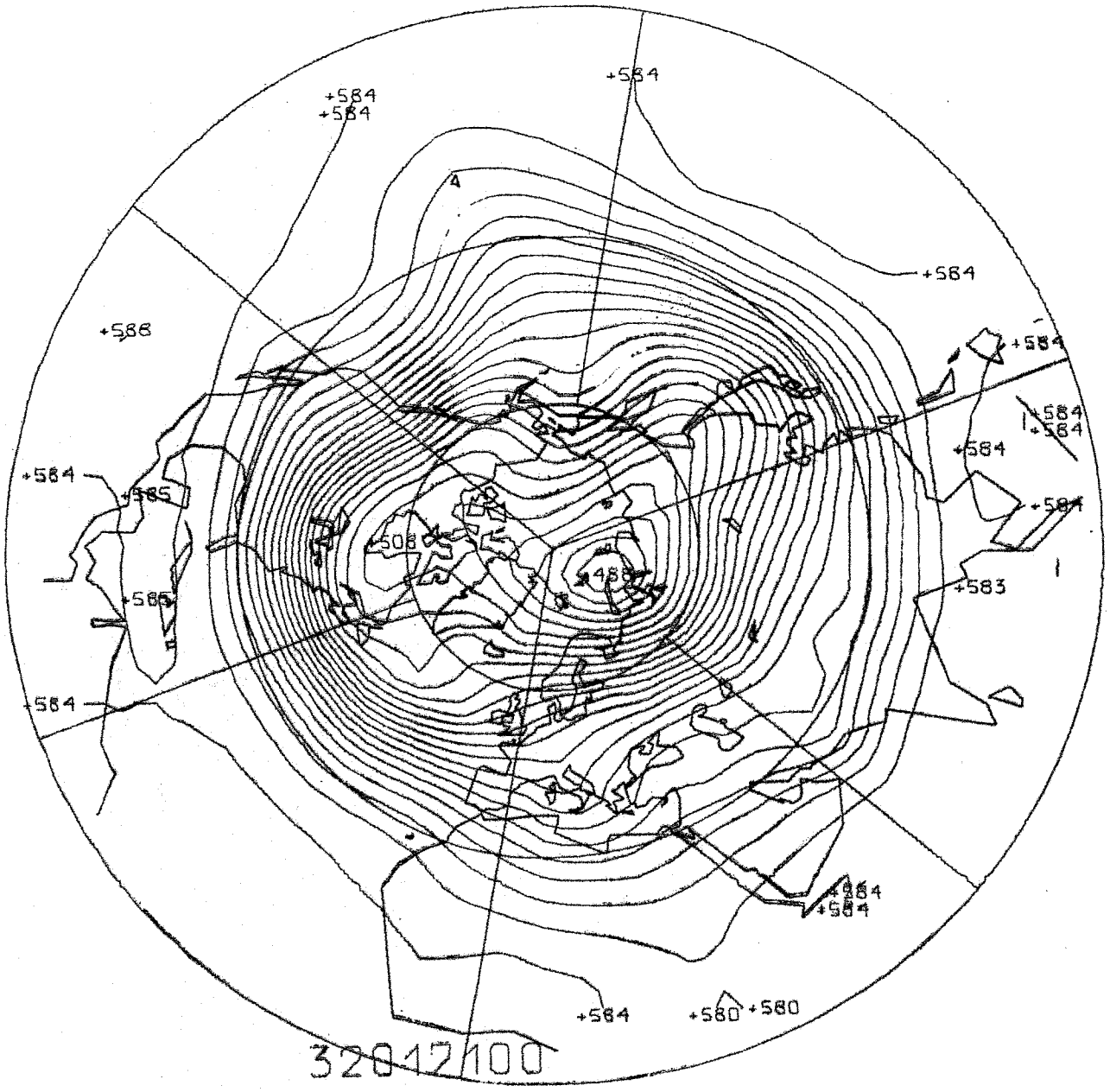


FIG. 17

$[T]_{(t)}$ 300mb JAN. 1971

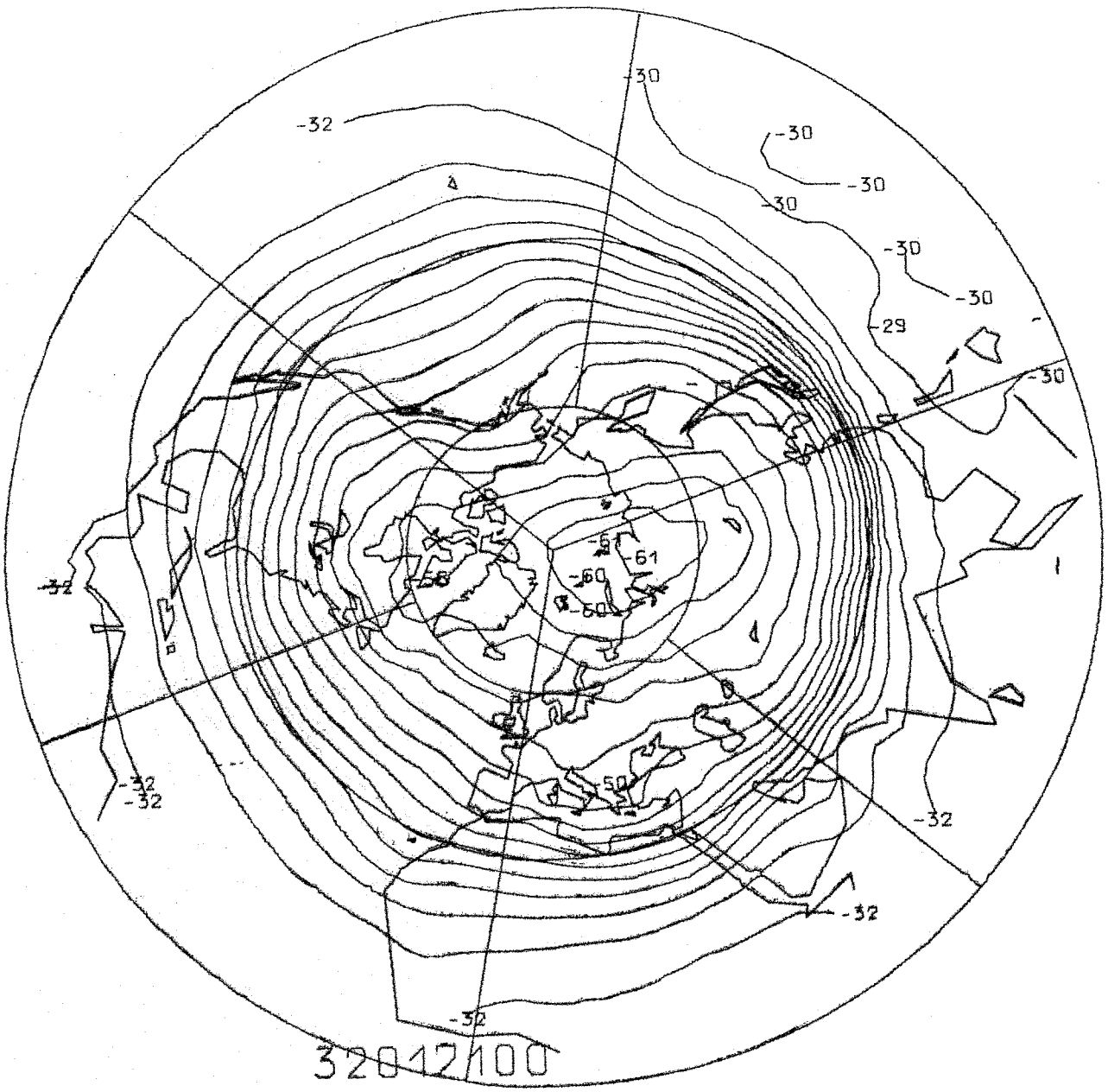


FIG. 18a

$[\phi]_{(t)}$ 300 mb JAN. 1971

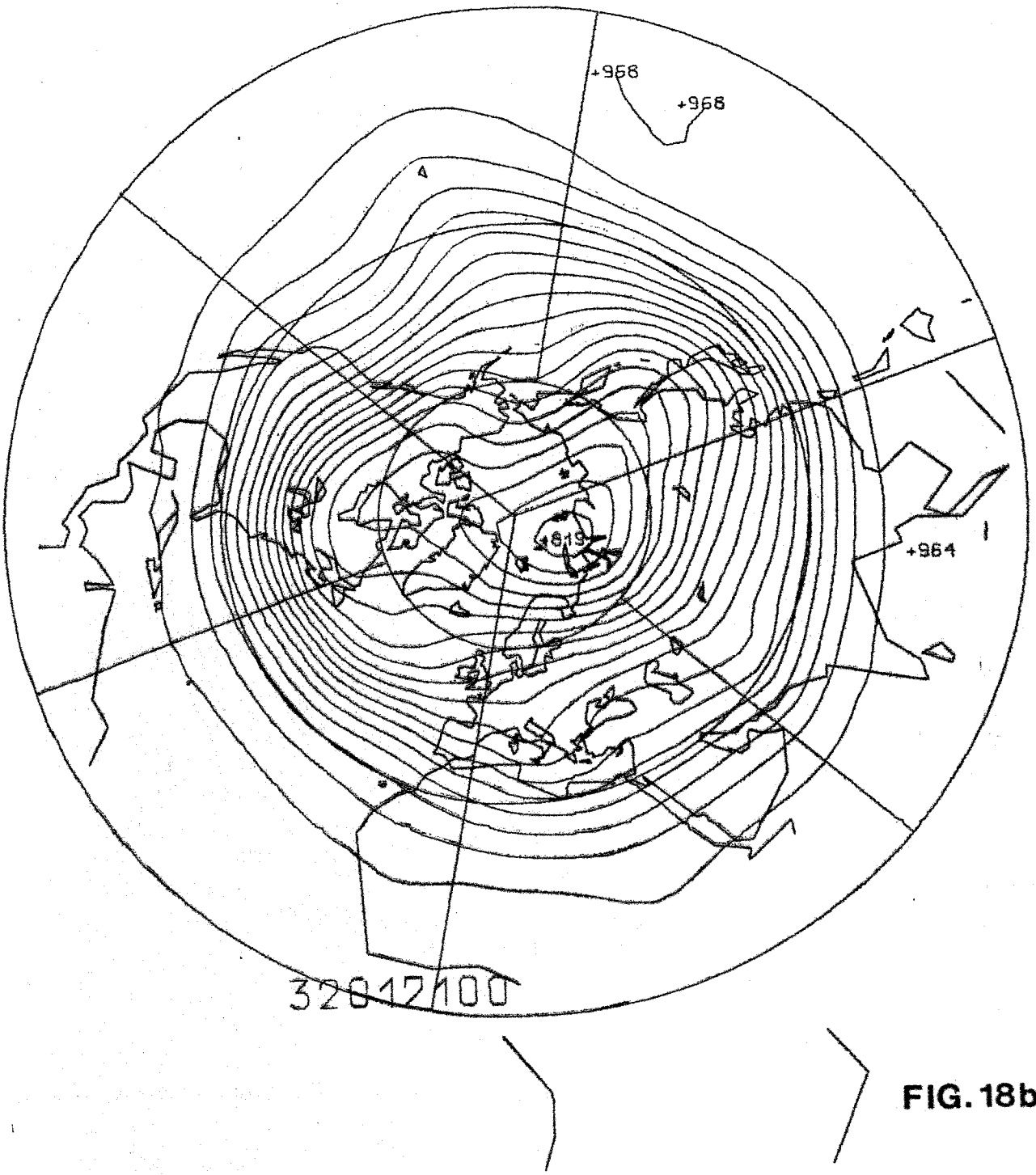


FIG. 18b

$[T]_{(t)}$ 100mb JAN. 1971

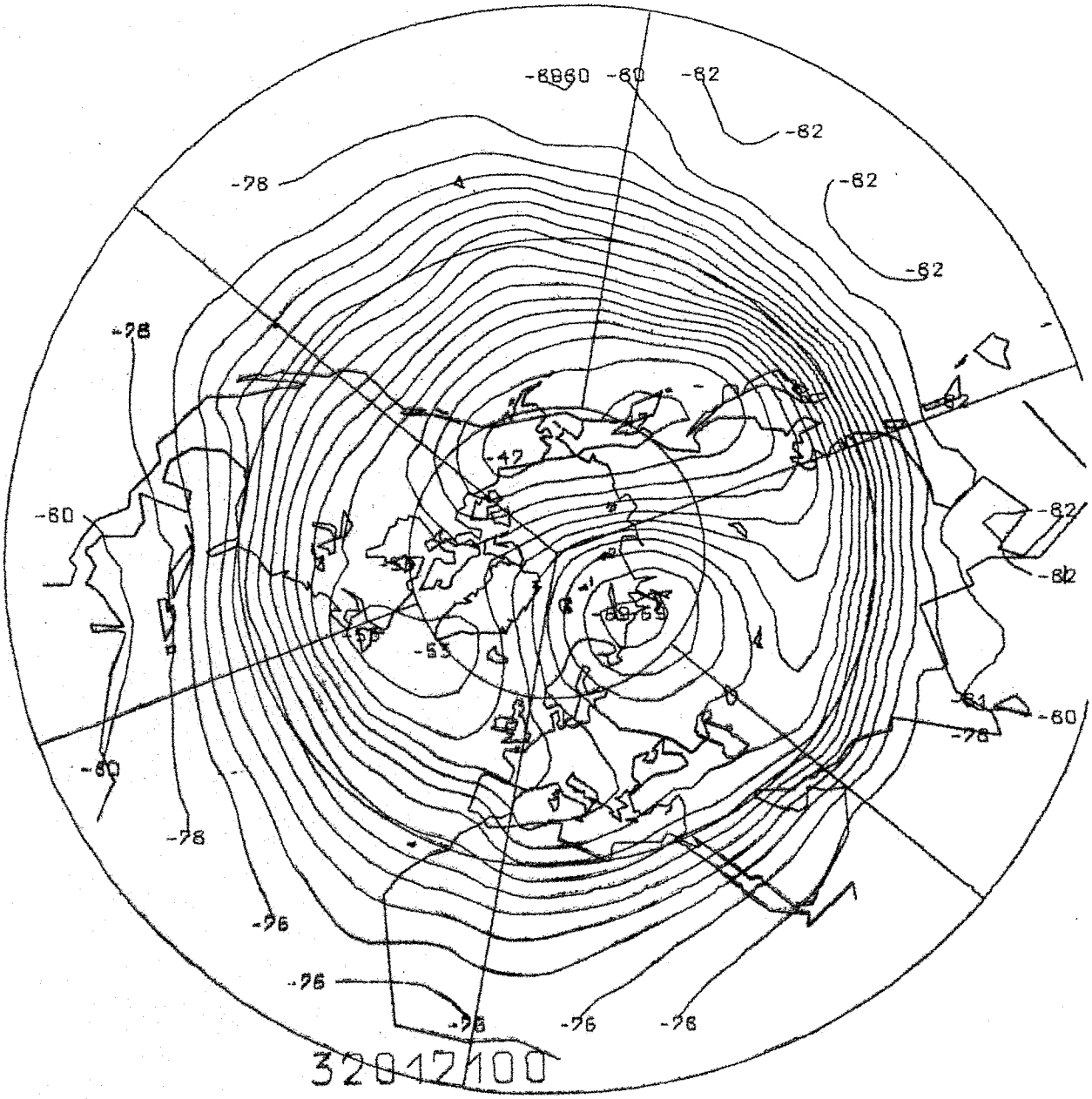


FIG. 19a

$[\phi]_{(t)}$ 100 mb JAN. 1971

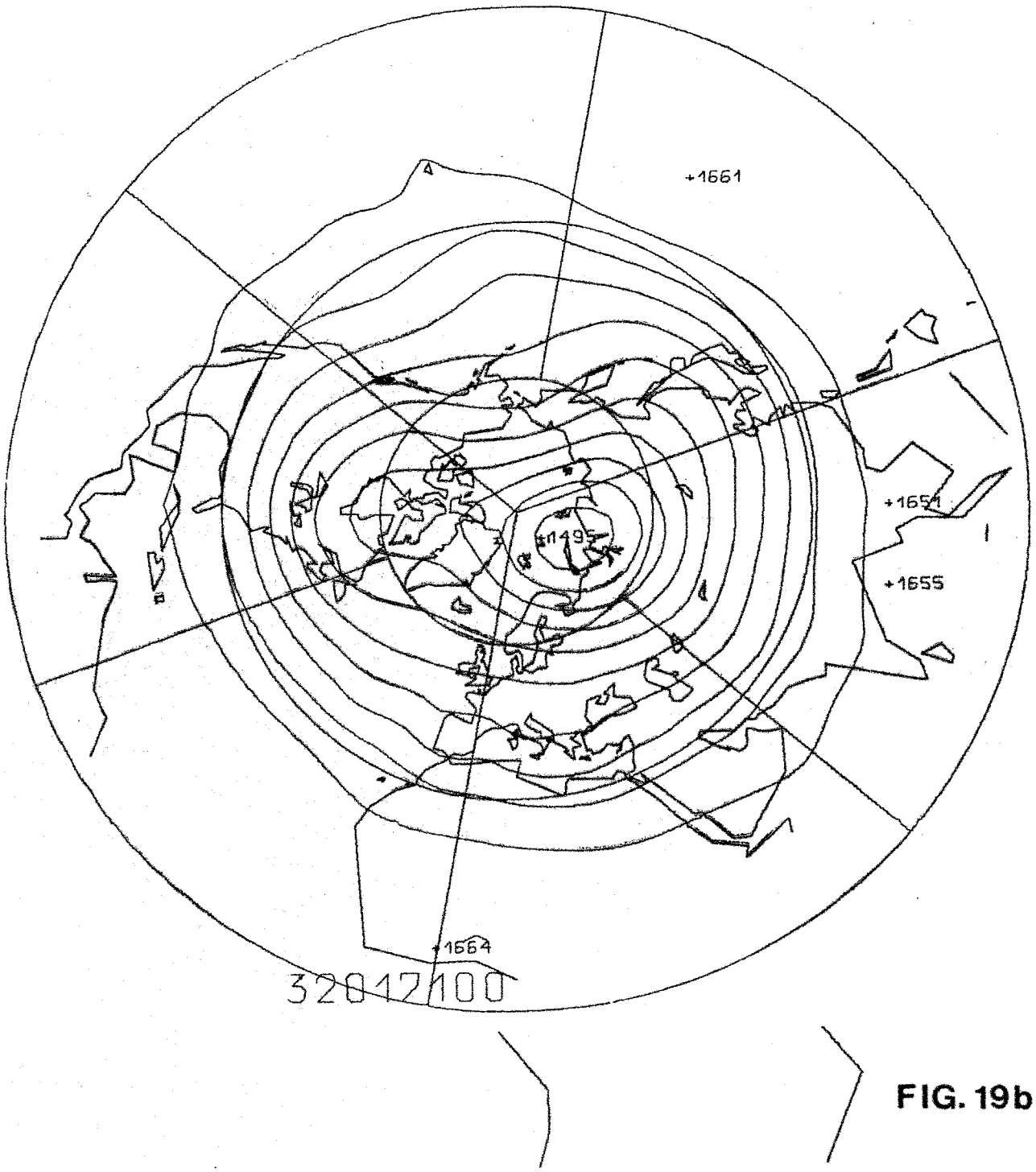


FIG. 19b

CALIFORNIA COMPUTER PRODUCTS, INC. ANAHEIM, CALIFORNIA CHART NO. 400

$[T]_{(t)}$ 850mb JAN. 1972

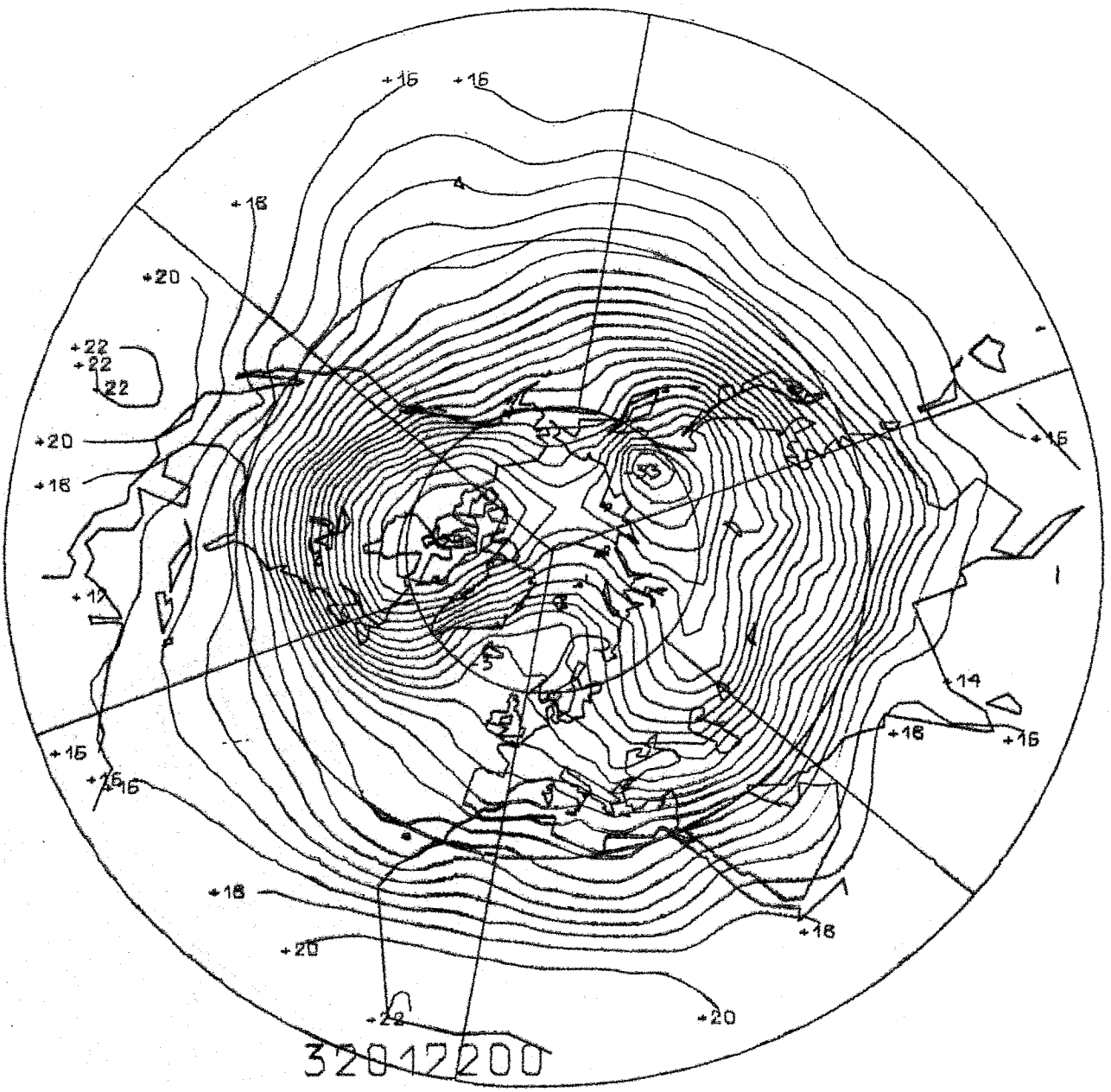


FIG. 20a

$[\phi]_{(t)}$ 850mb JAN. 1972

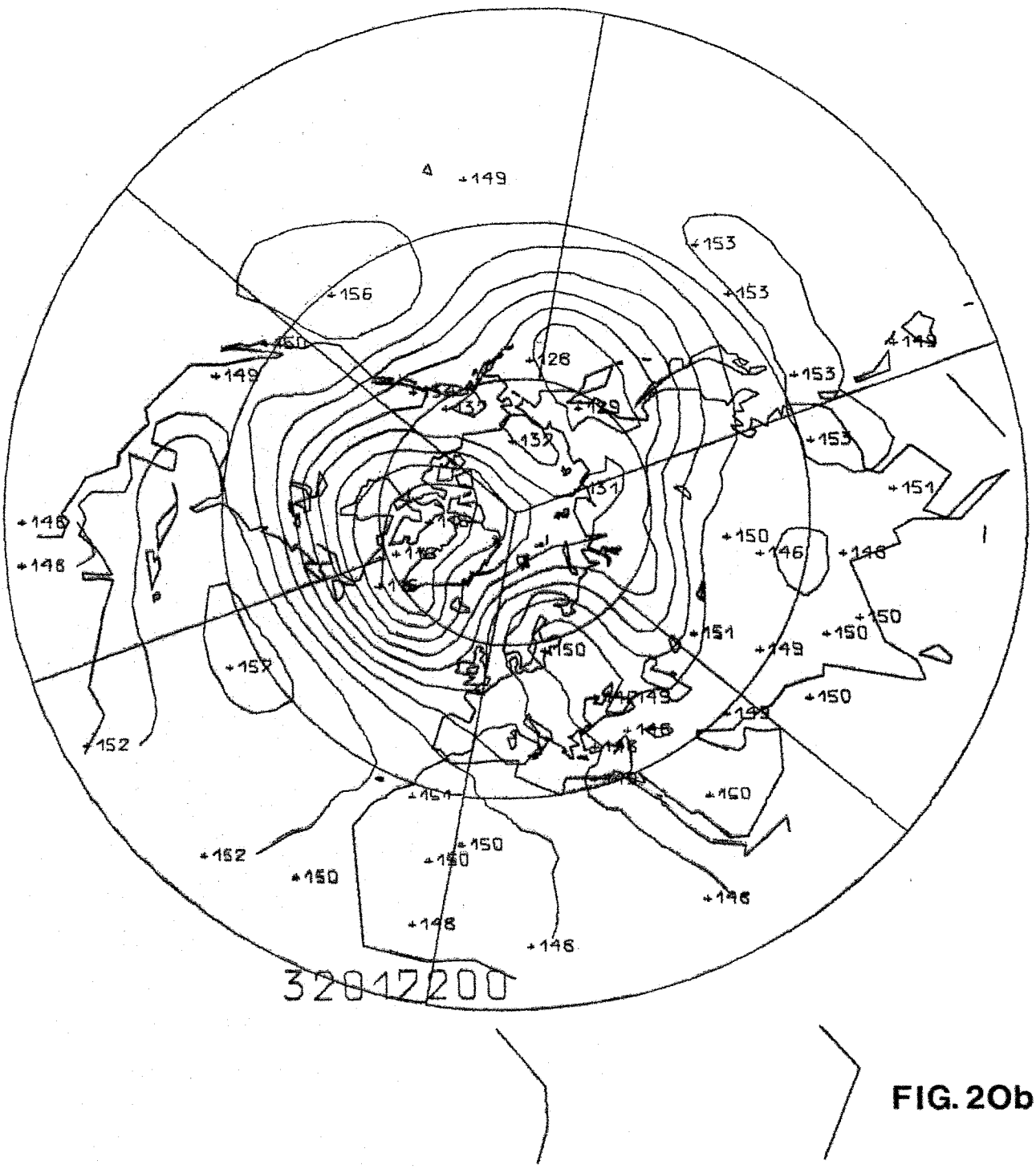
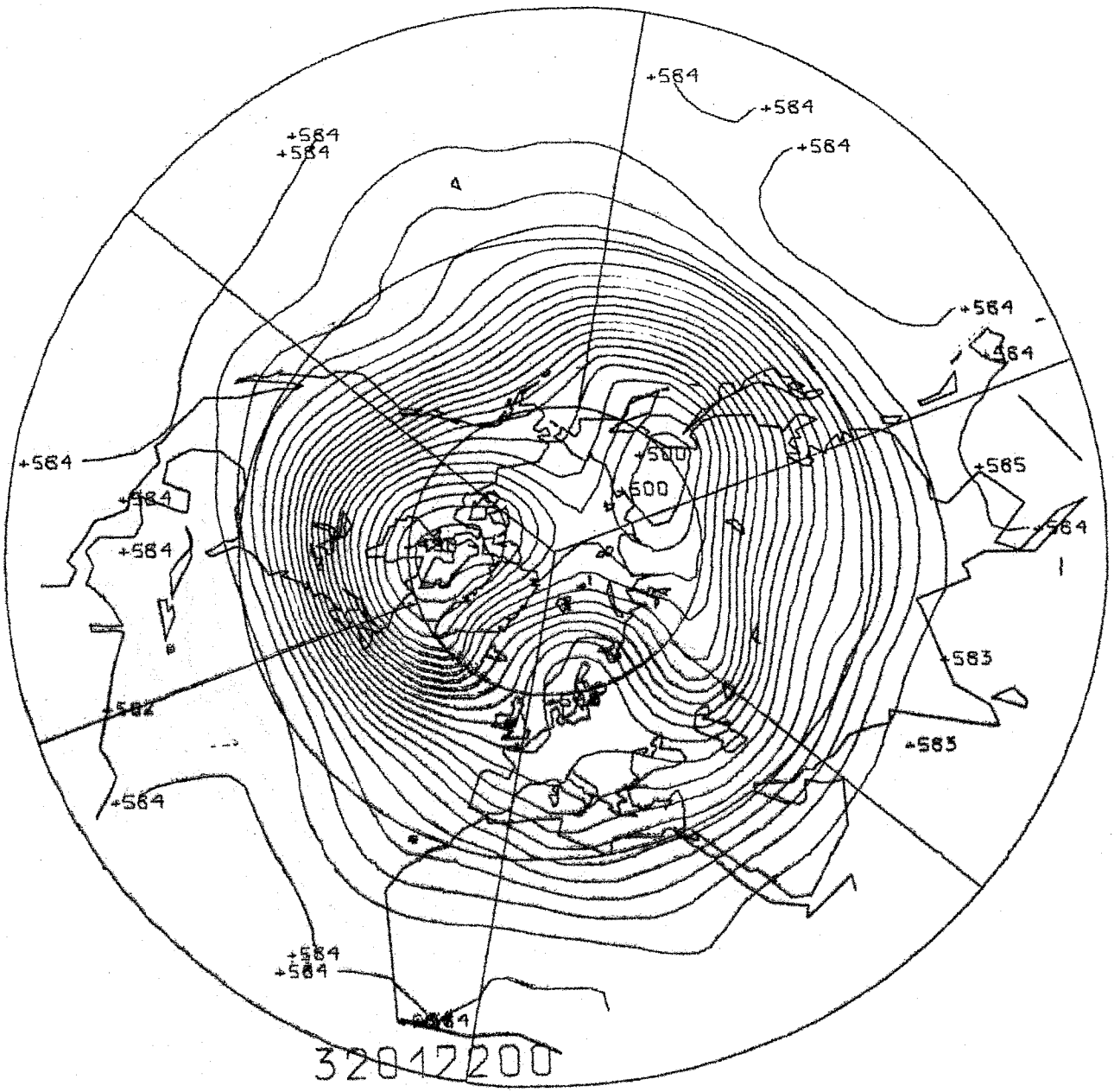


FIG. 20b

$[\phi]_{(t)}$ 500mb JAN. 1972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$[T]_{(t)}$ 300 mb JAN. 1972

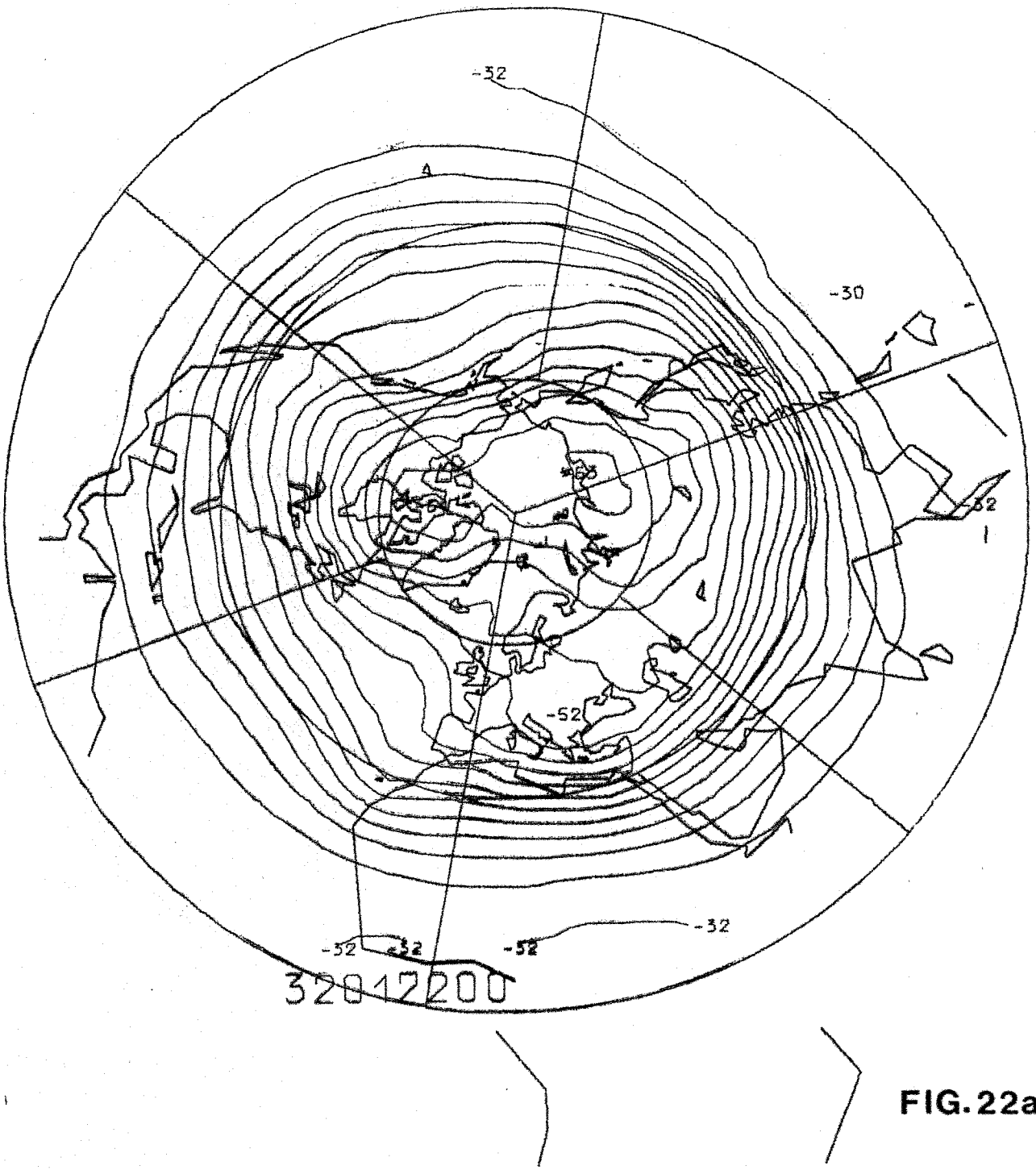

FIG. 22a

$[\phi]_{(t)}$ 300 mb JAN. 1972

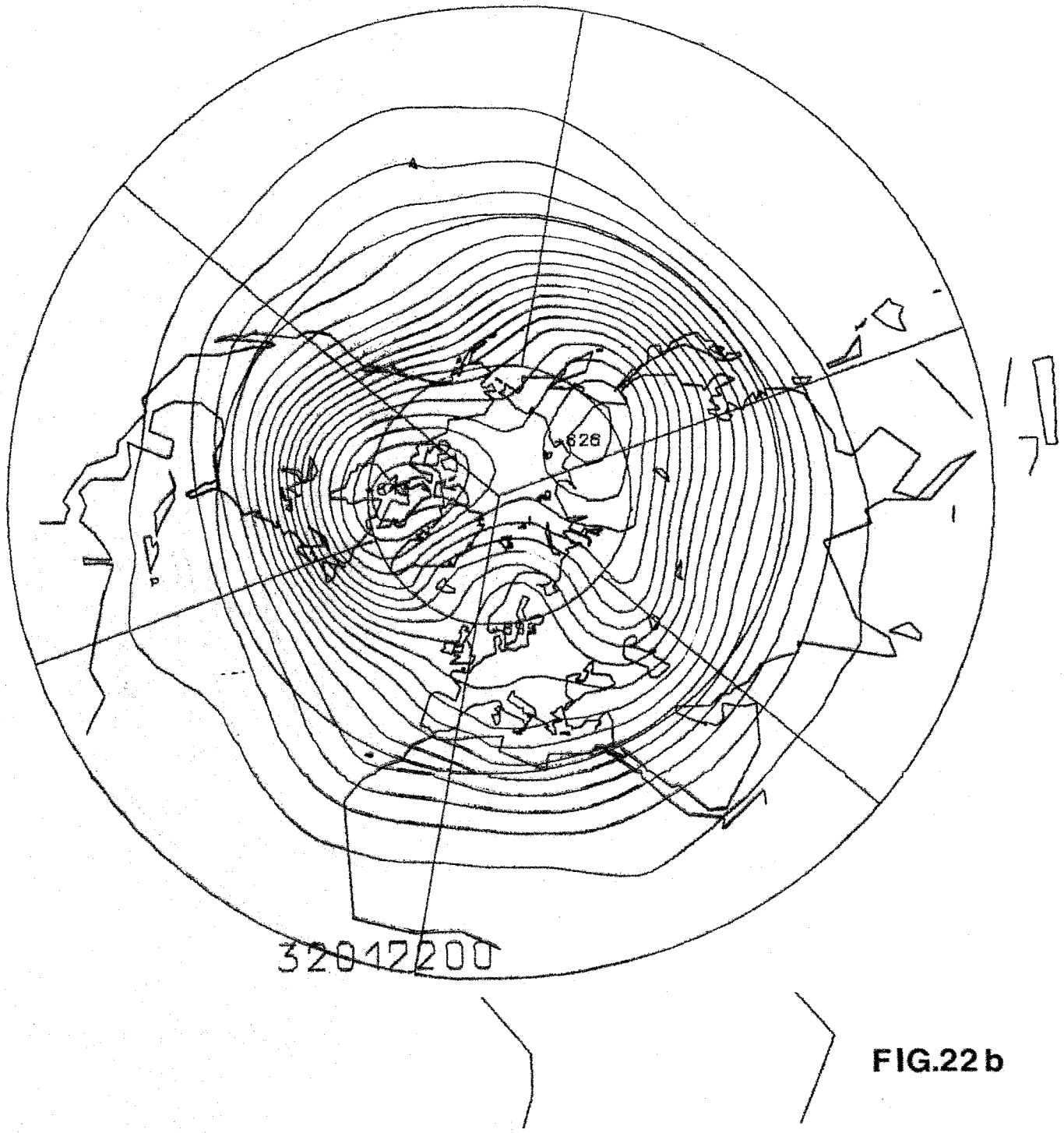

FIG.22b

$[T]_{(t)}$ 100mb JAN. 1972

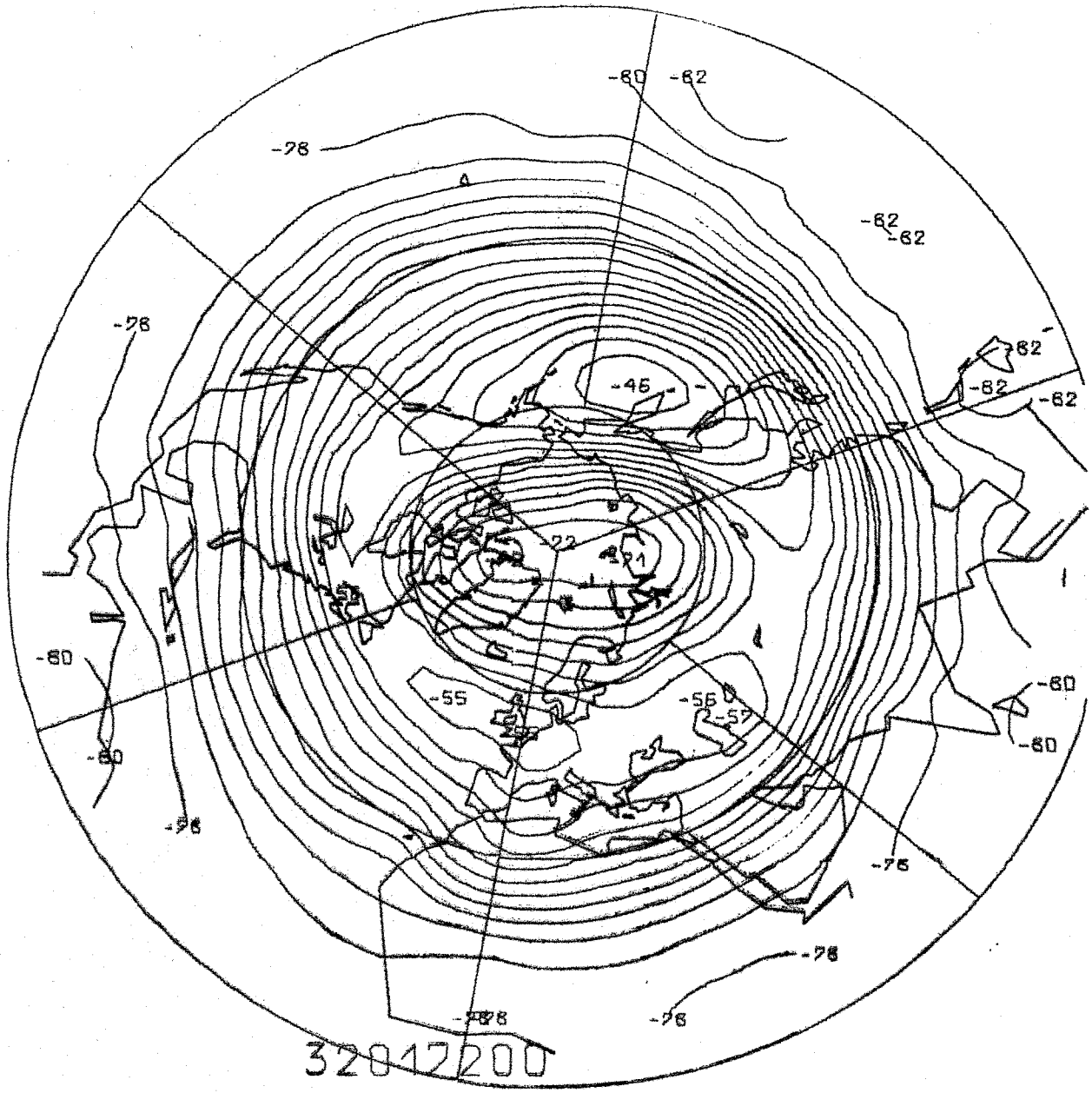

FIG. 23a

$[\phi]_{(t)}$ 100 mb JAN. 1972

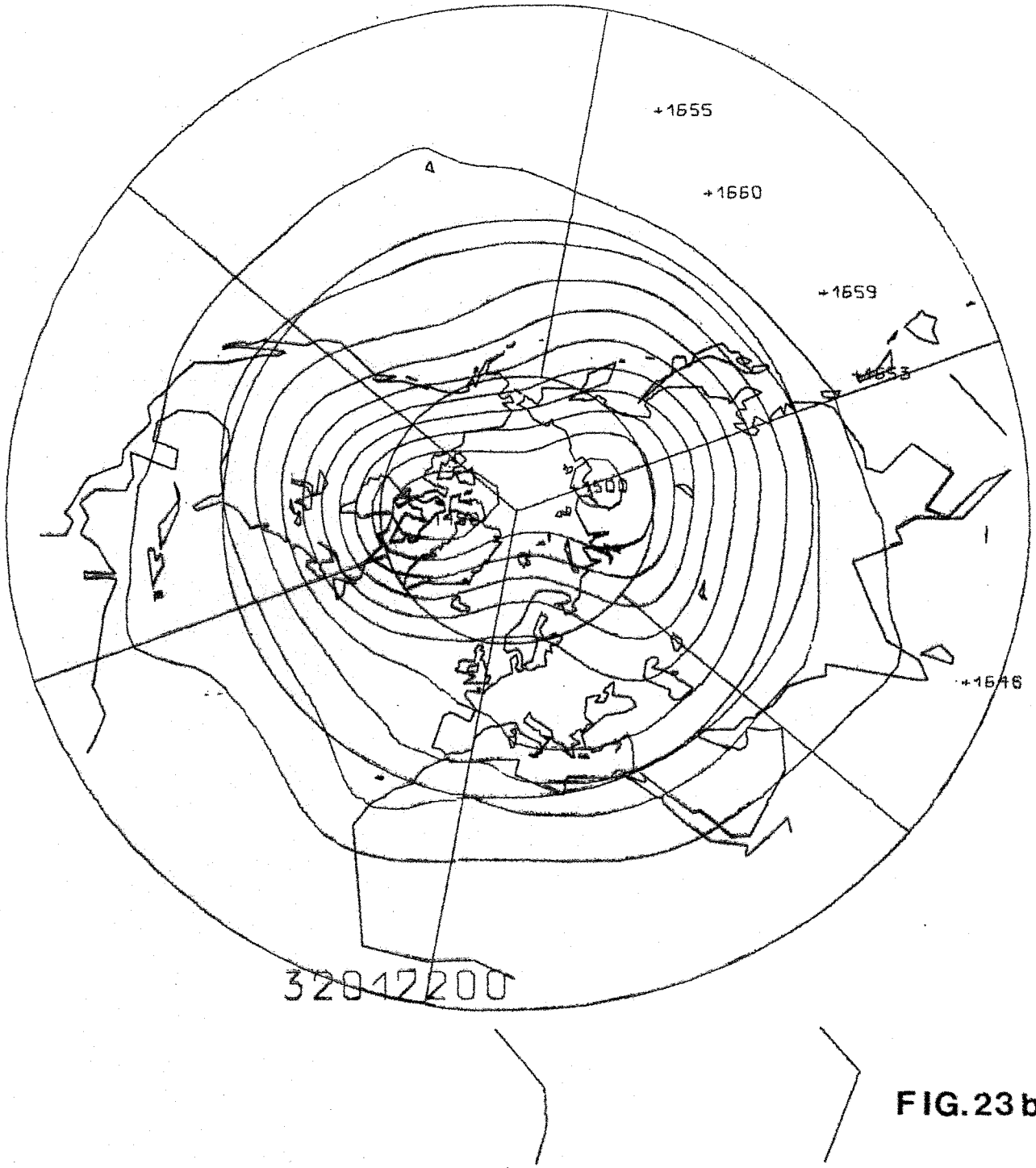

FIG. 23b

$[T]_{(t)}$ 850 mb JAN. 1973

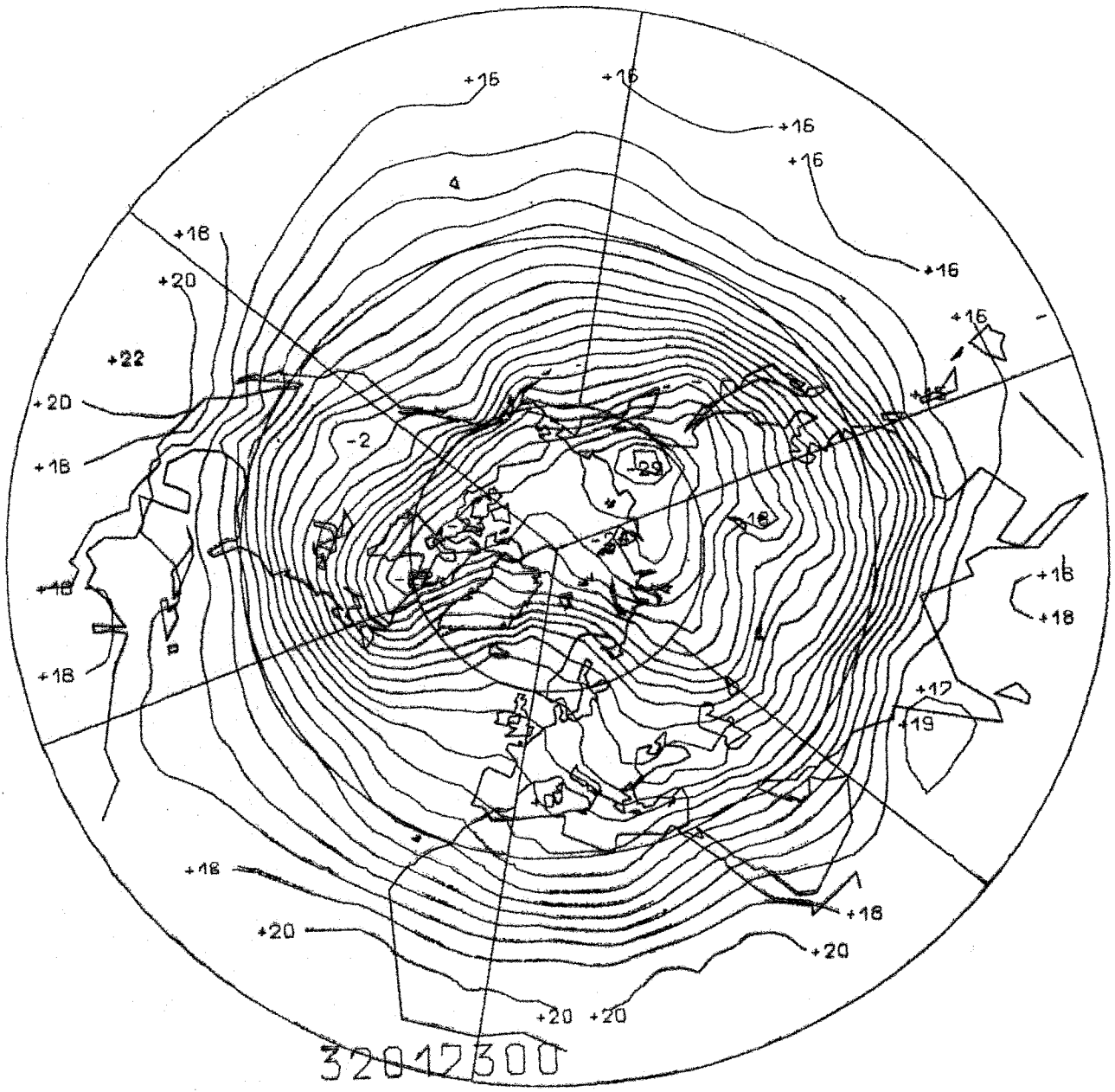

FIG. 24 a

$[\Phi]_{(t)}$ 850mb JAN. 1973

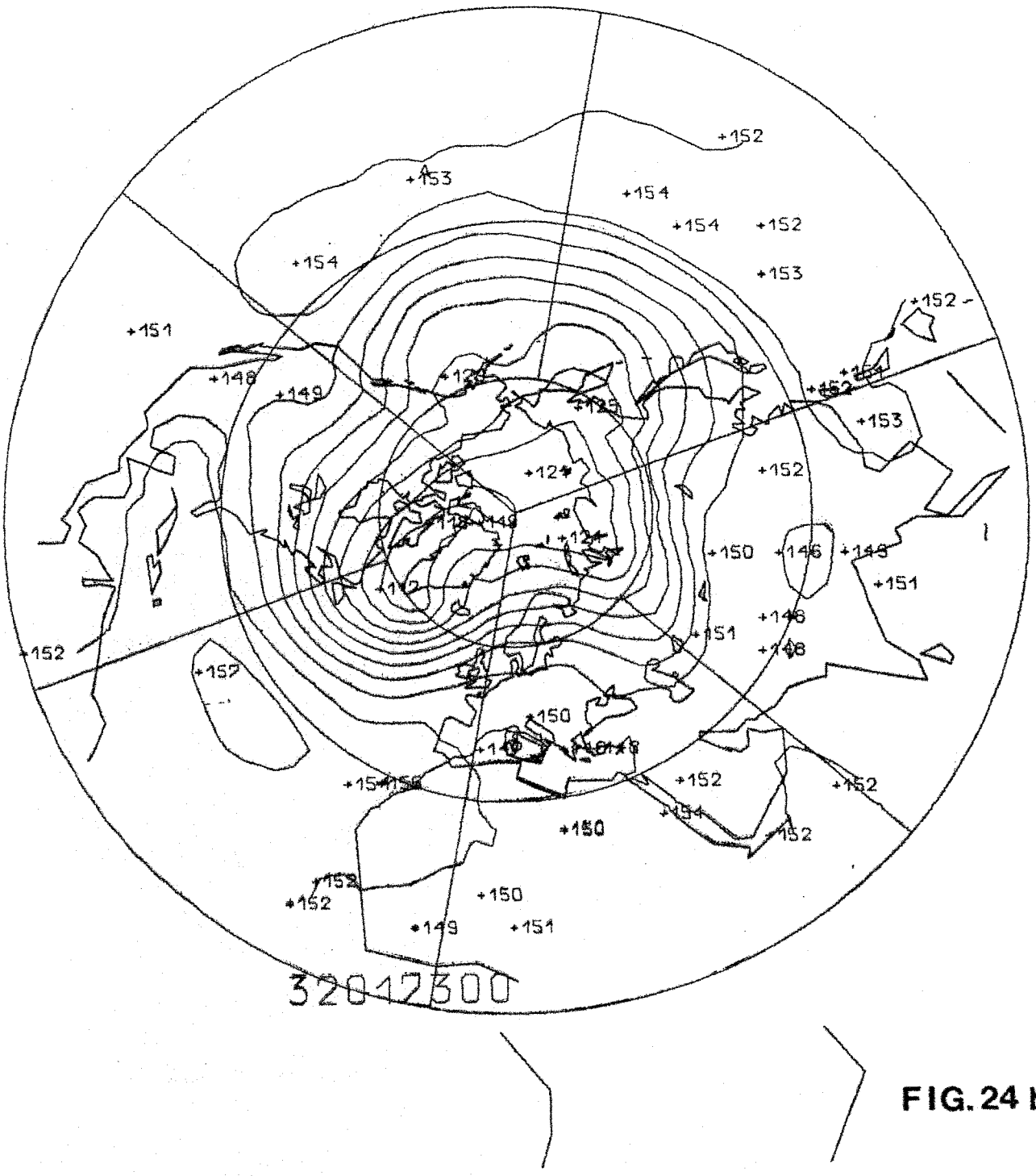

FIG. 24 b

$[\Phi]_{(t)}$ 500mb JAN. 1973

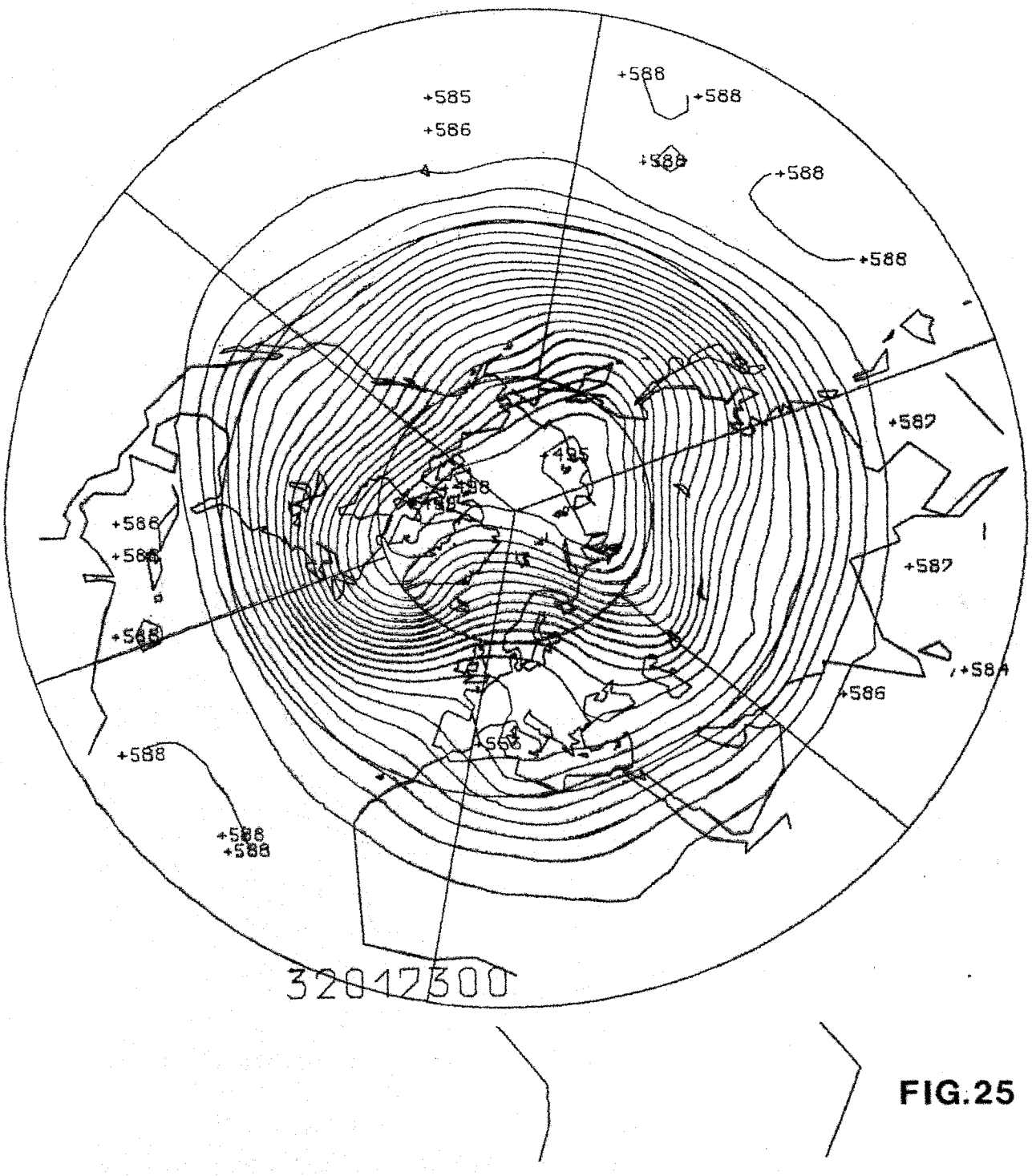

FIG.25

$[T]_{(t)}$ 300mb JAN. 1973

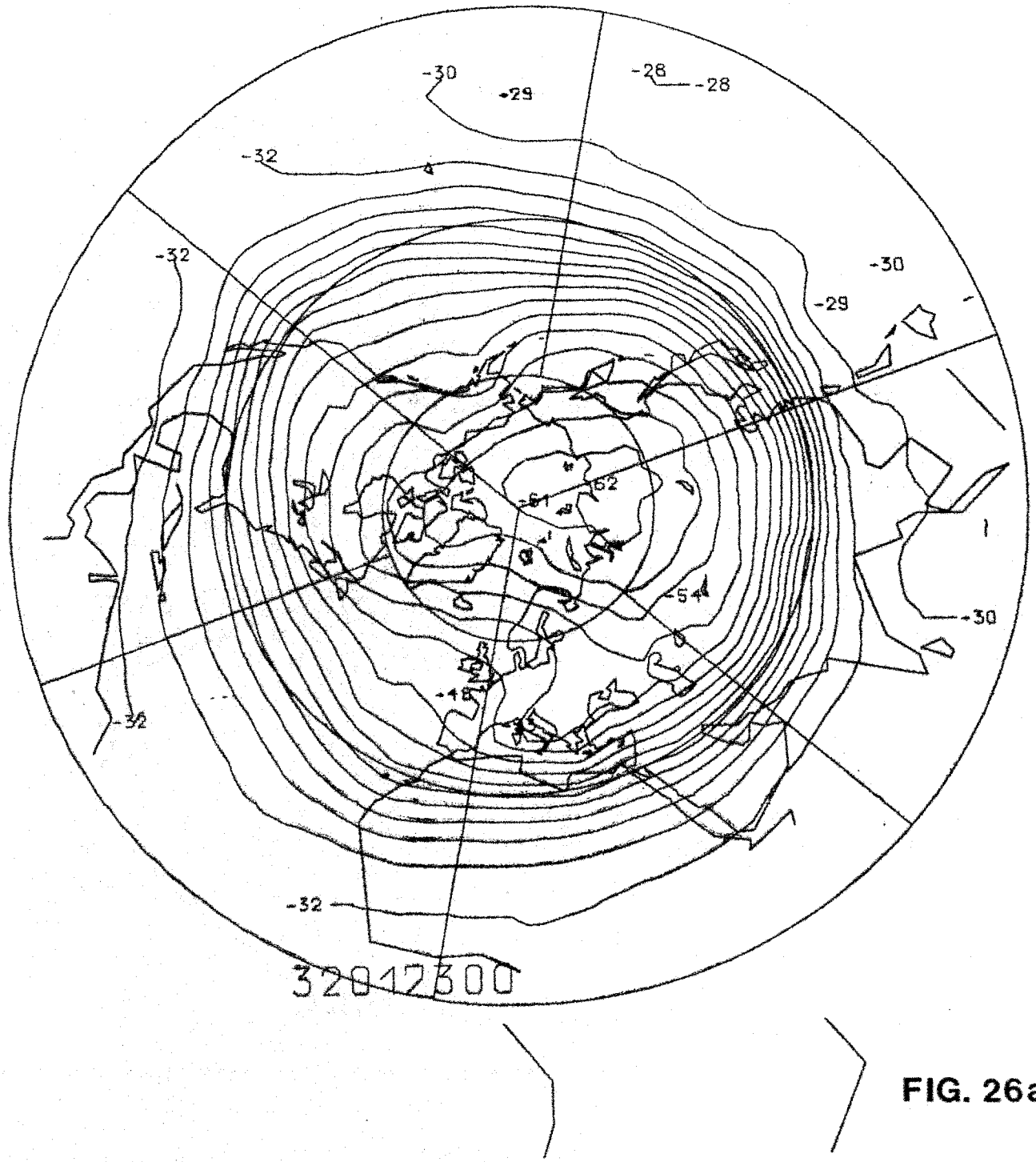

FIG. 26a

$[\Phi]_{(t)}$ 300 mb JAN. 1973

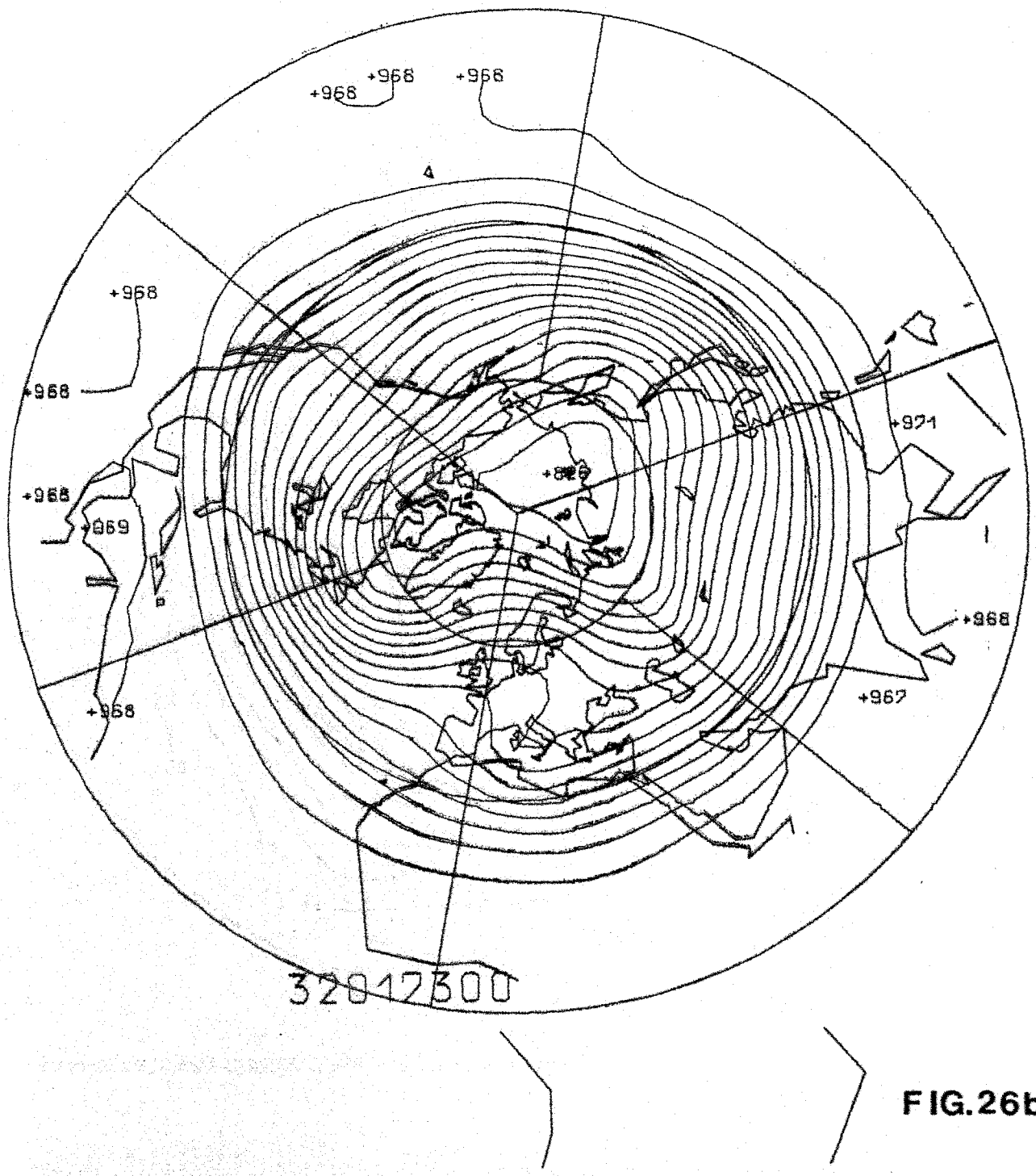

FIG.26b

$[T]_{(t)}$ 100 mb JAN. 1973

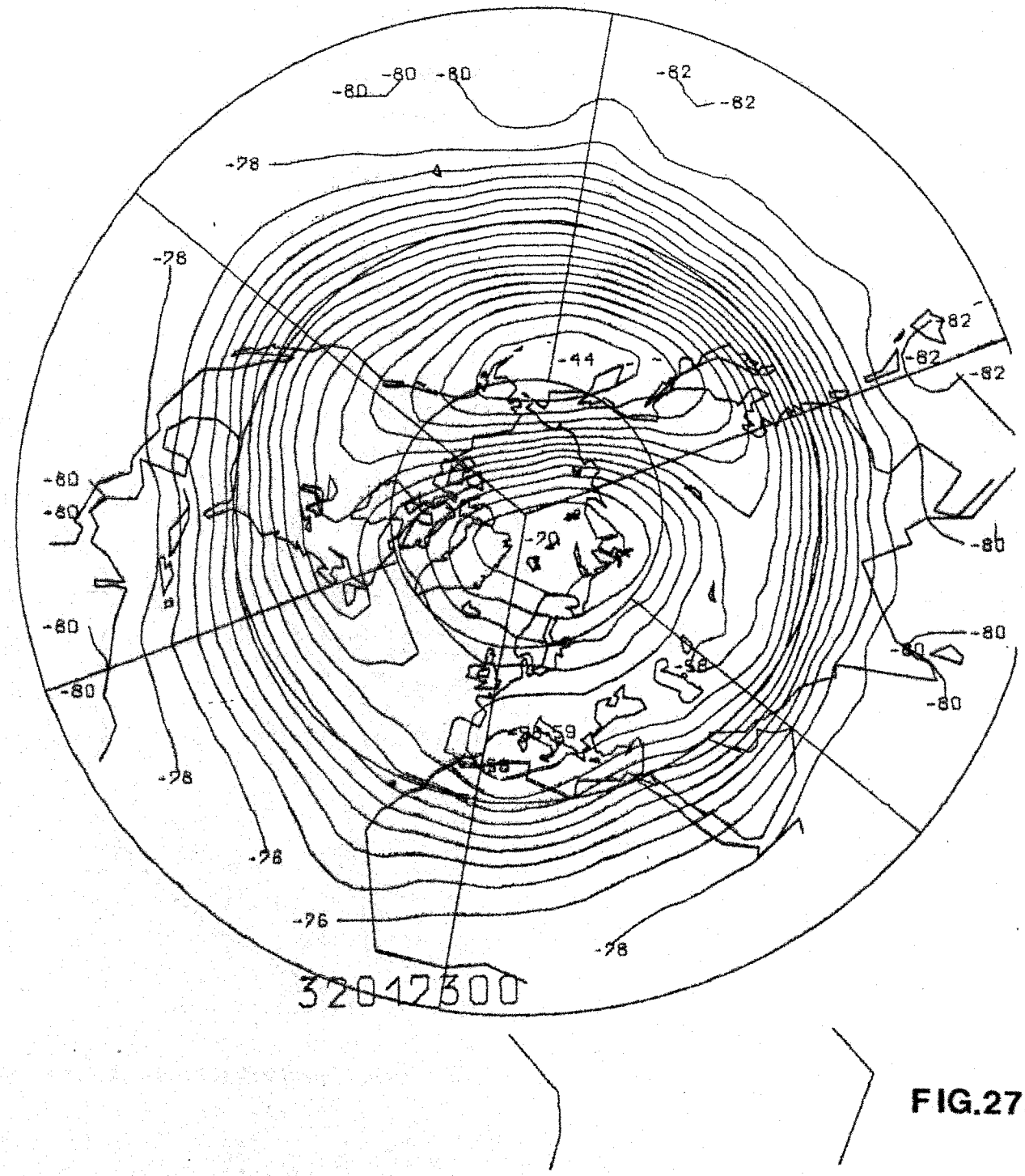

FIG.27a

$[\Phi]_{(t)}$ 100 mb JAN. 1973

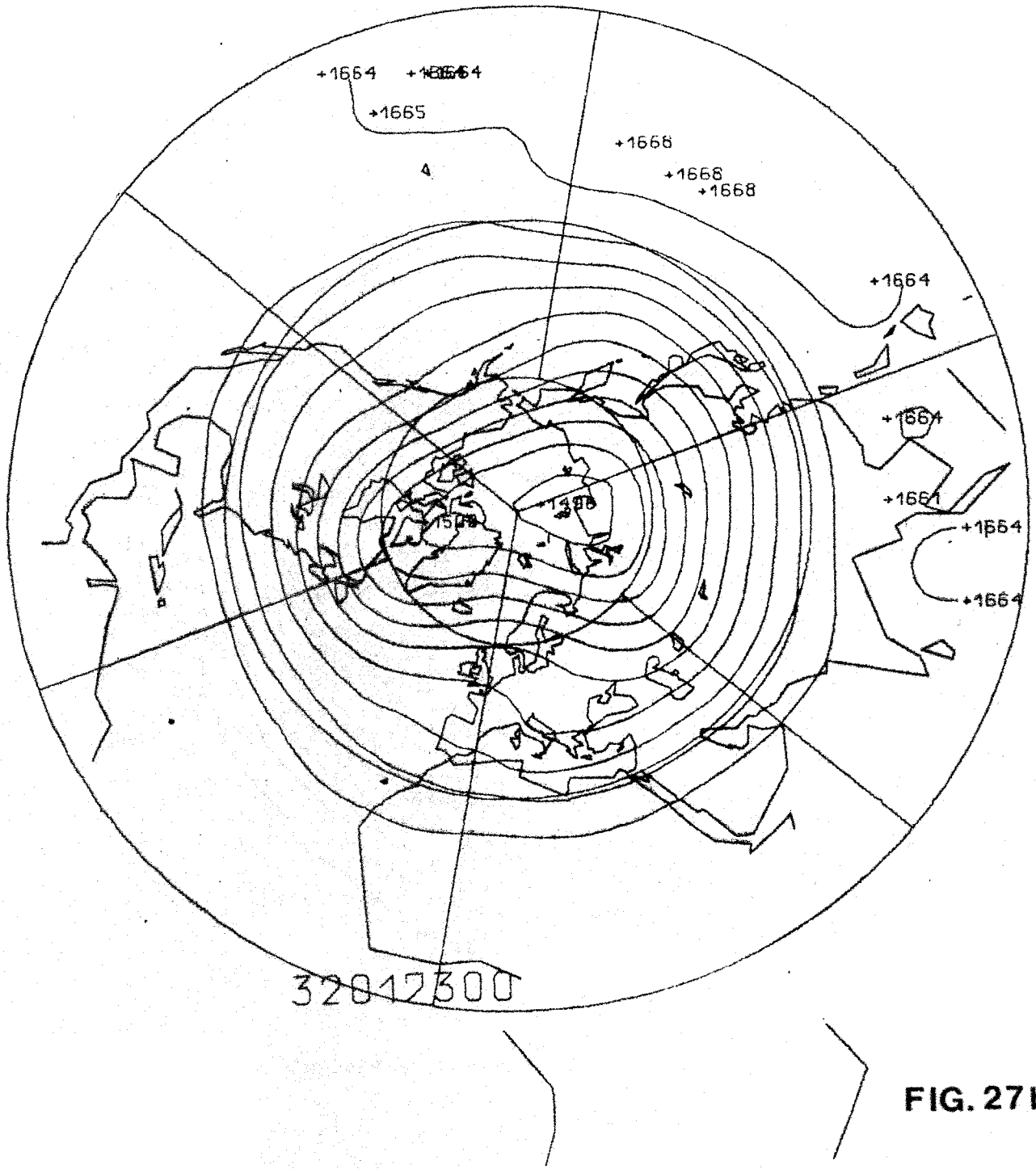

FIG. 27b

$[T]_{(t)}$ 850mb JAN. 1974

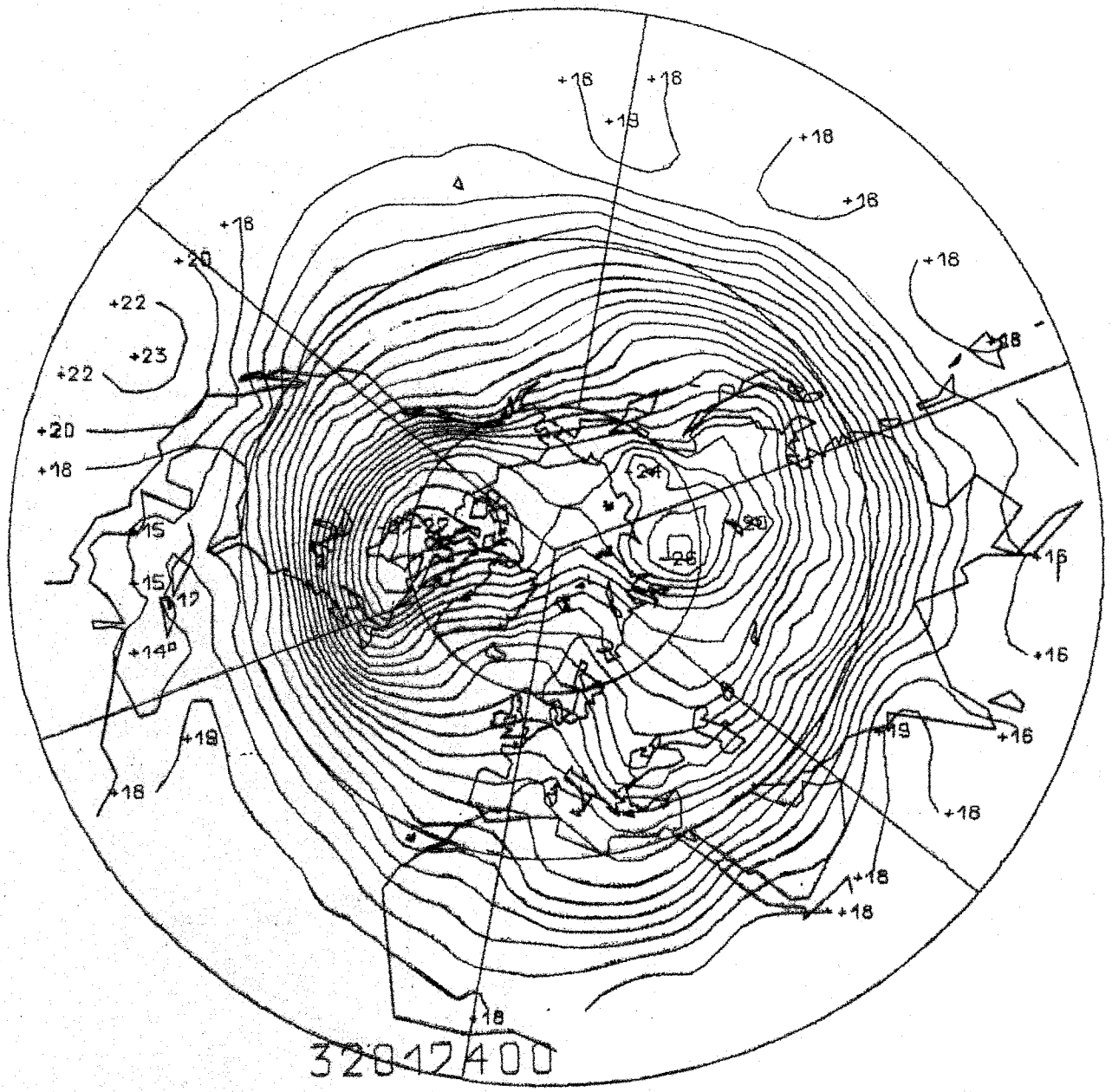

FIG. 28a

$[\phi]_{(t)}$ 850mb JAN. 1974

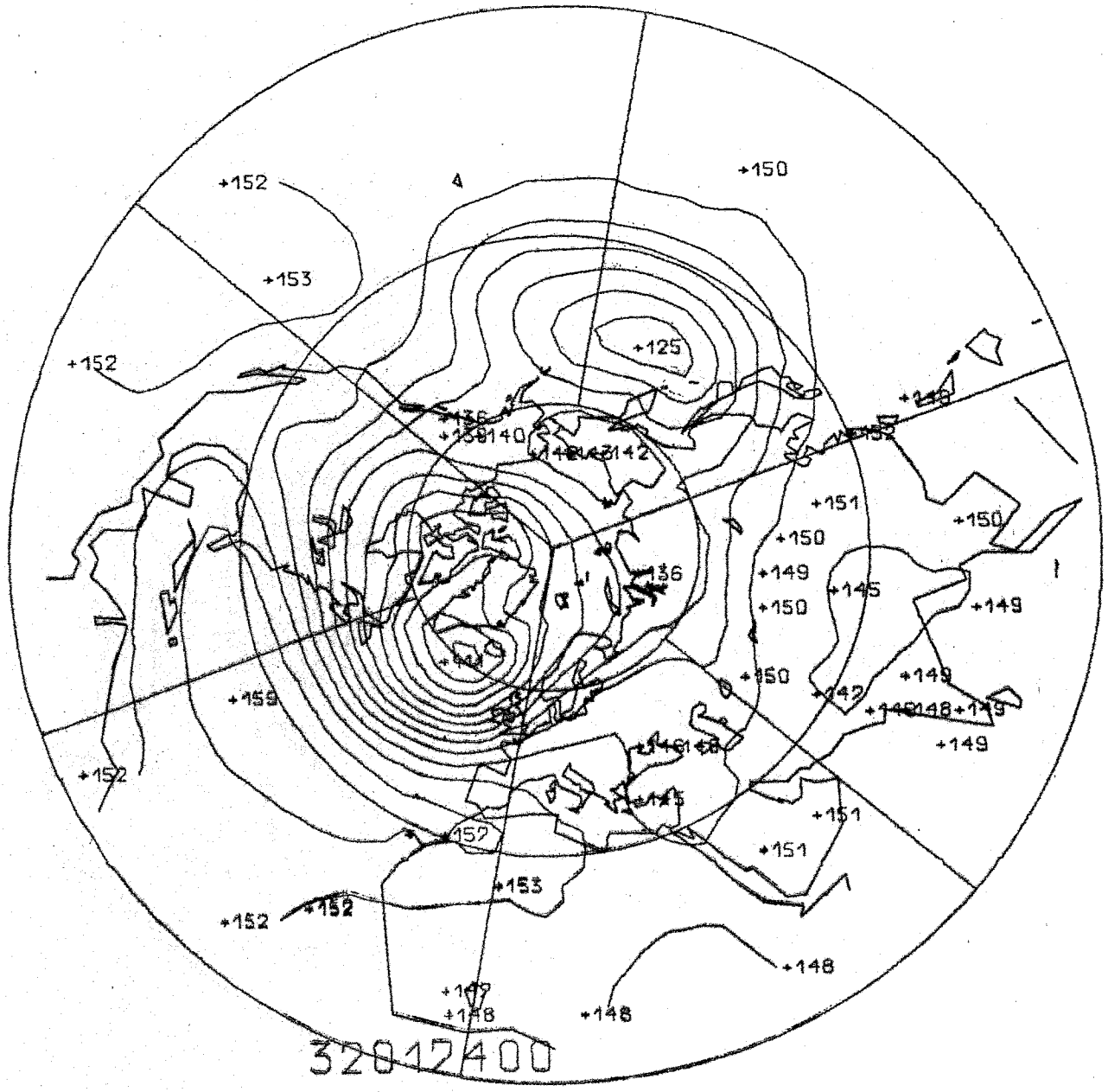

FIG. 28b

$[\phi]_{(t)}$ 500mb JAN. 1974

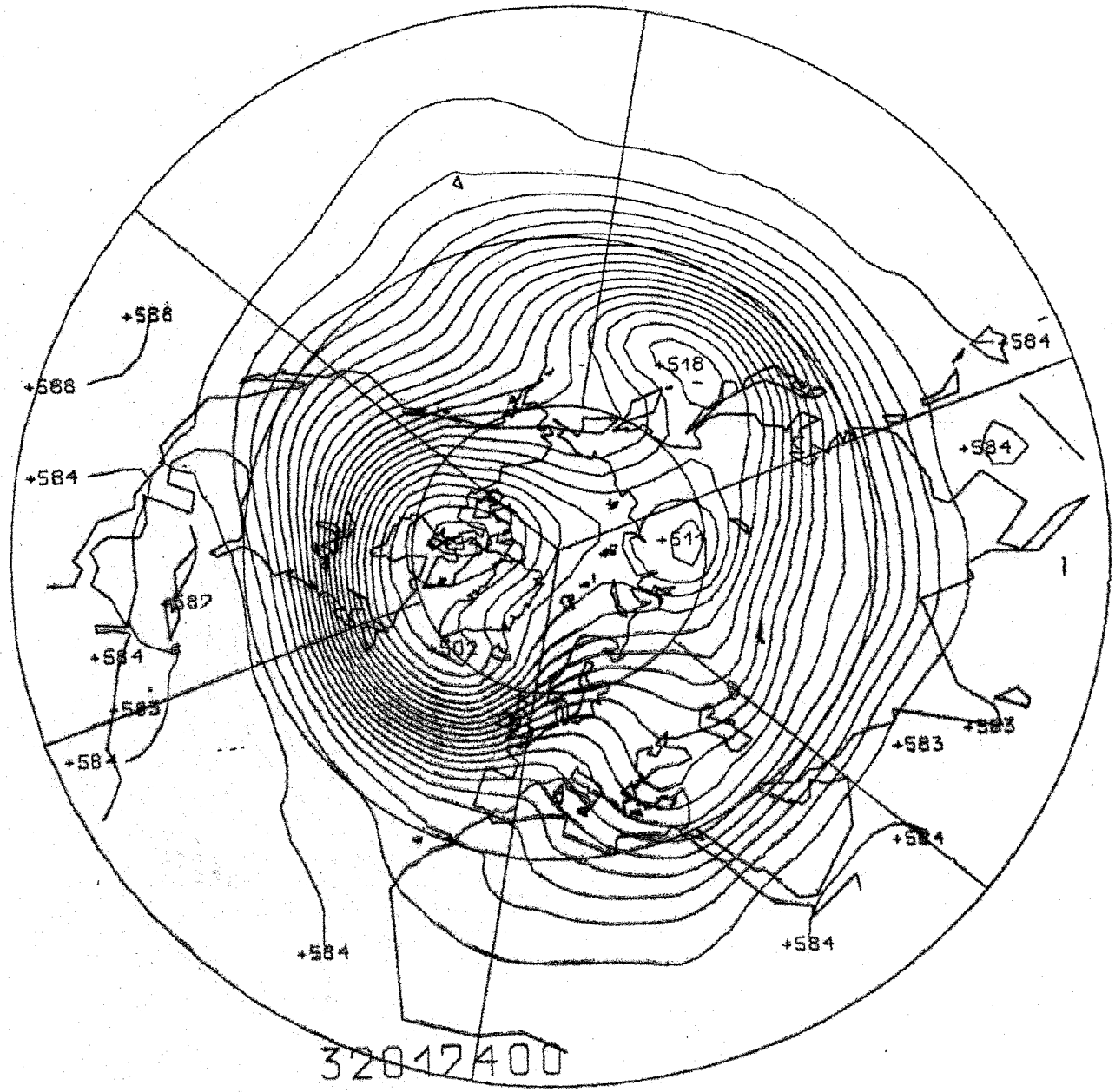

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FIG. 29

$[T]_{(t)}$ 300mb JAN. 1974

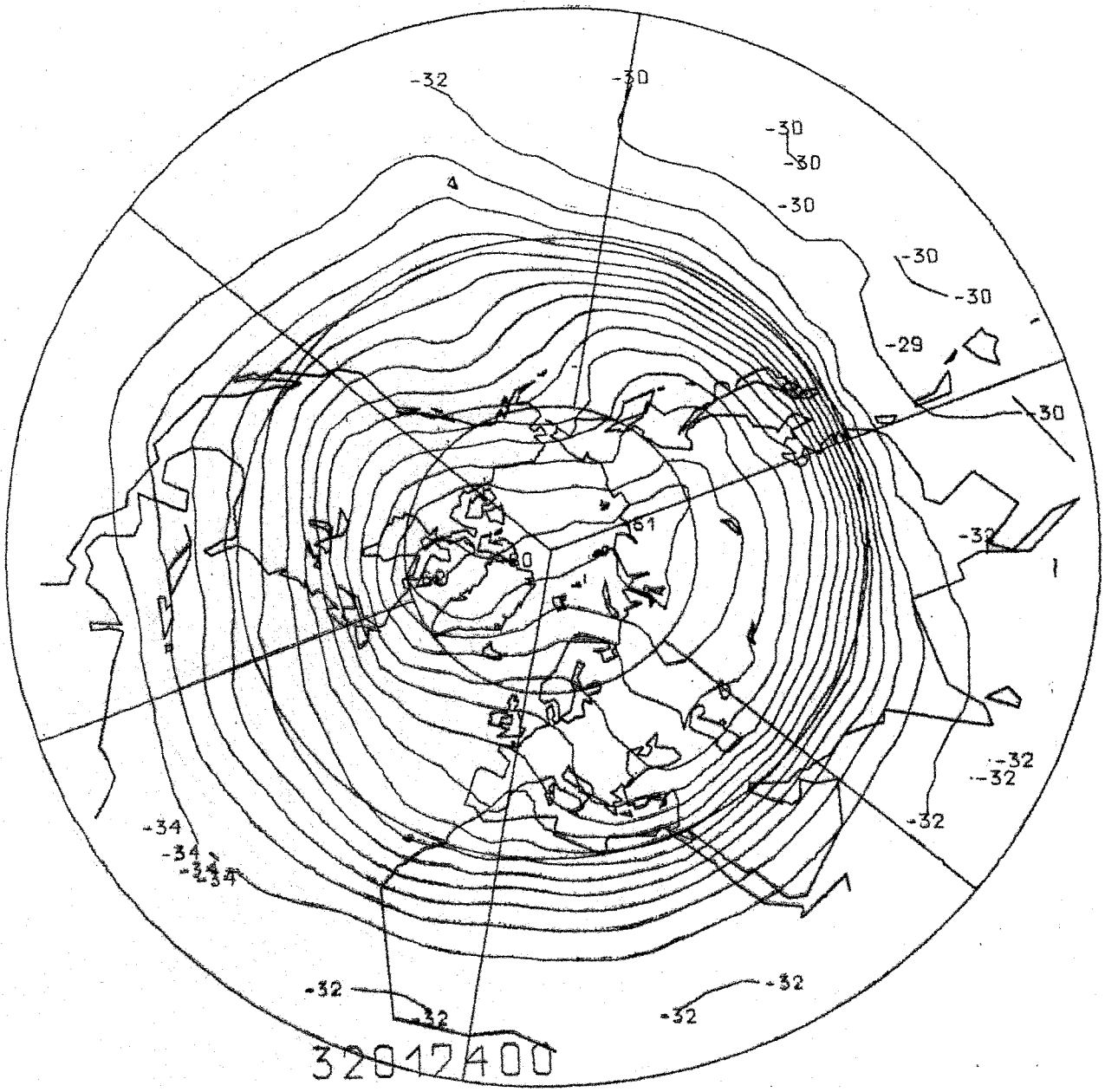


FIG.30a

$[\phi]_{(t)}$ 300mb JAN. 1974

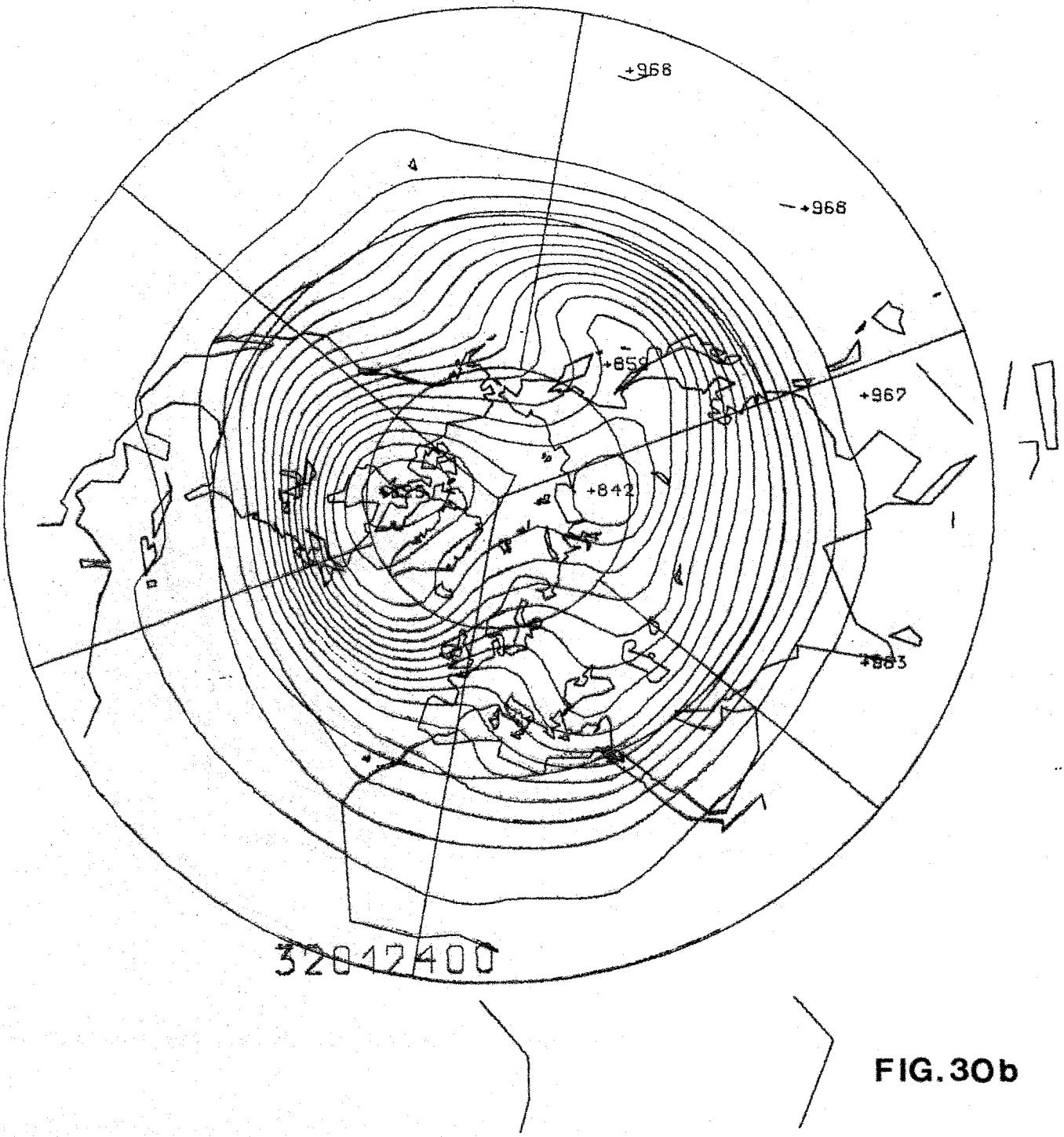


FIG. 3Ob

$[T]_{(t)}$ 100 mb JAN. 1974

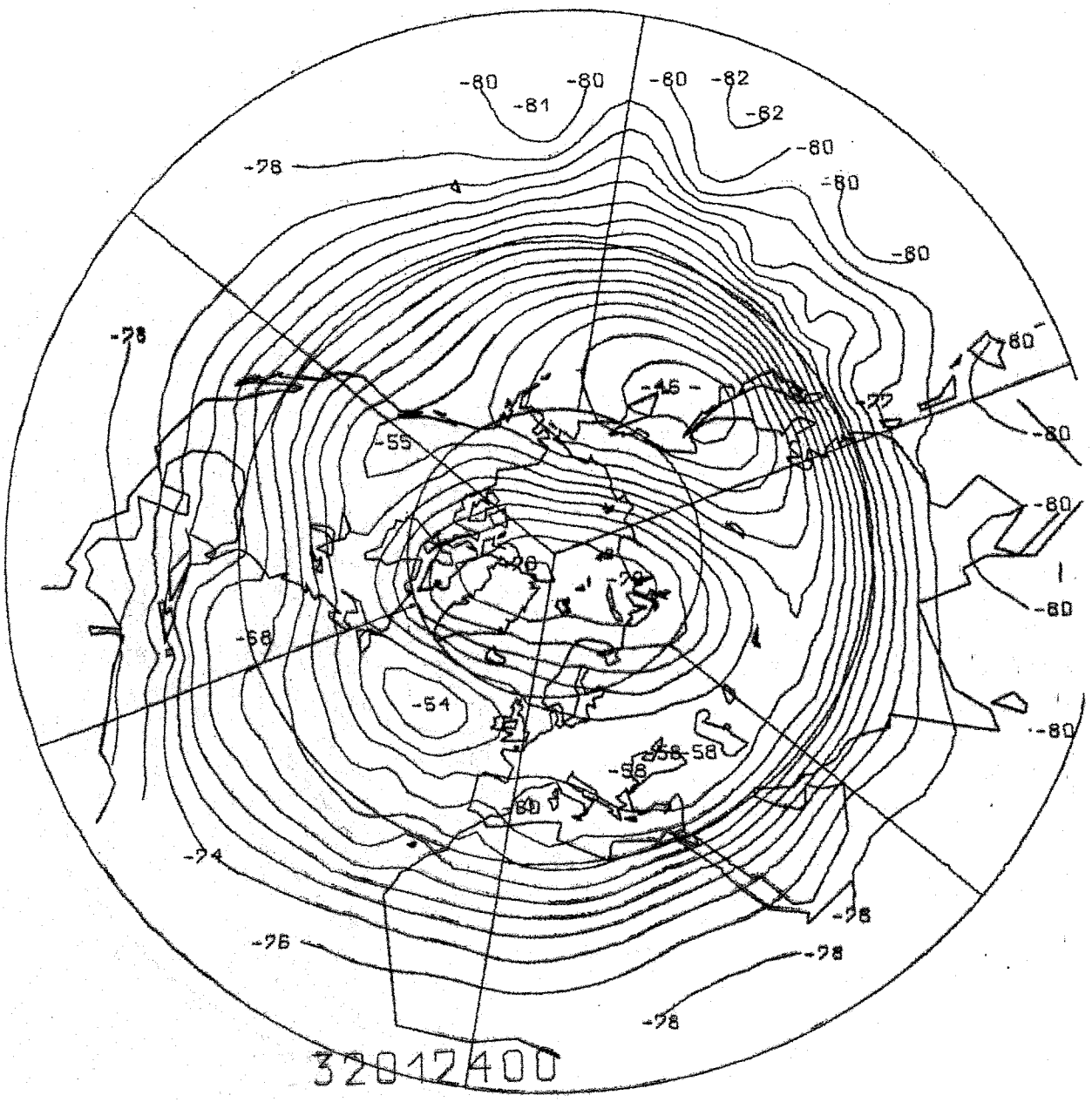


FIG. 31a

$[\phi]_{(t)}$ 100mb JAN. 1974

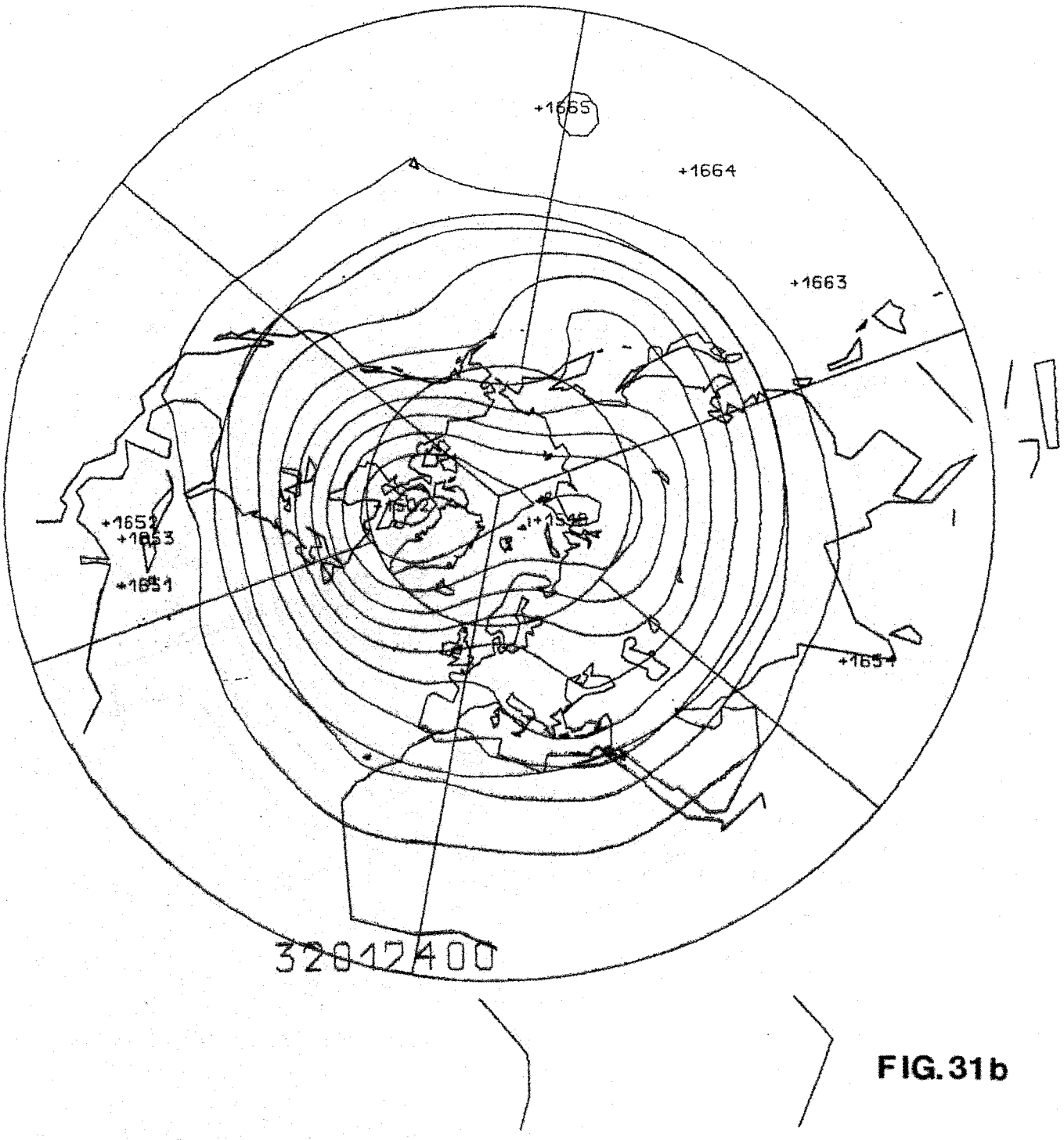


FIG. 31b

$[T]_{(t)}$ 850mb JAN. 1975

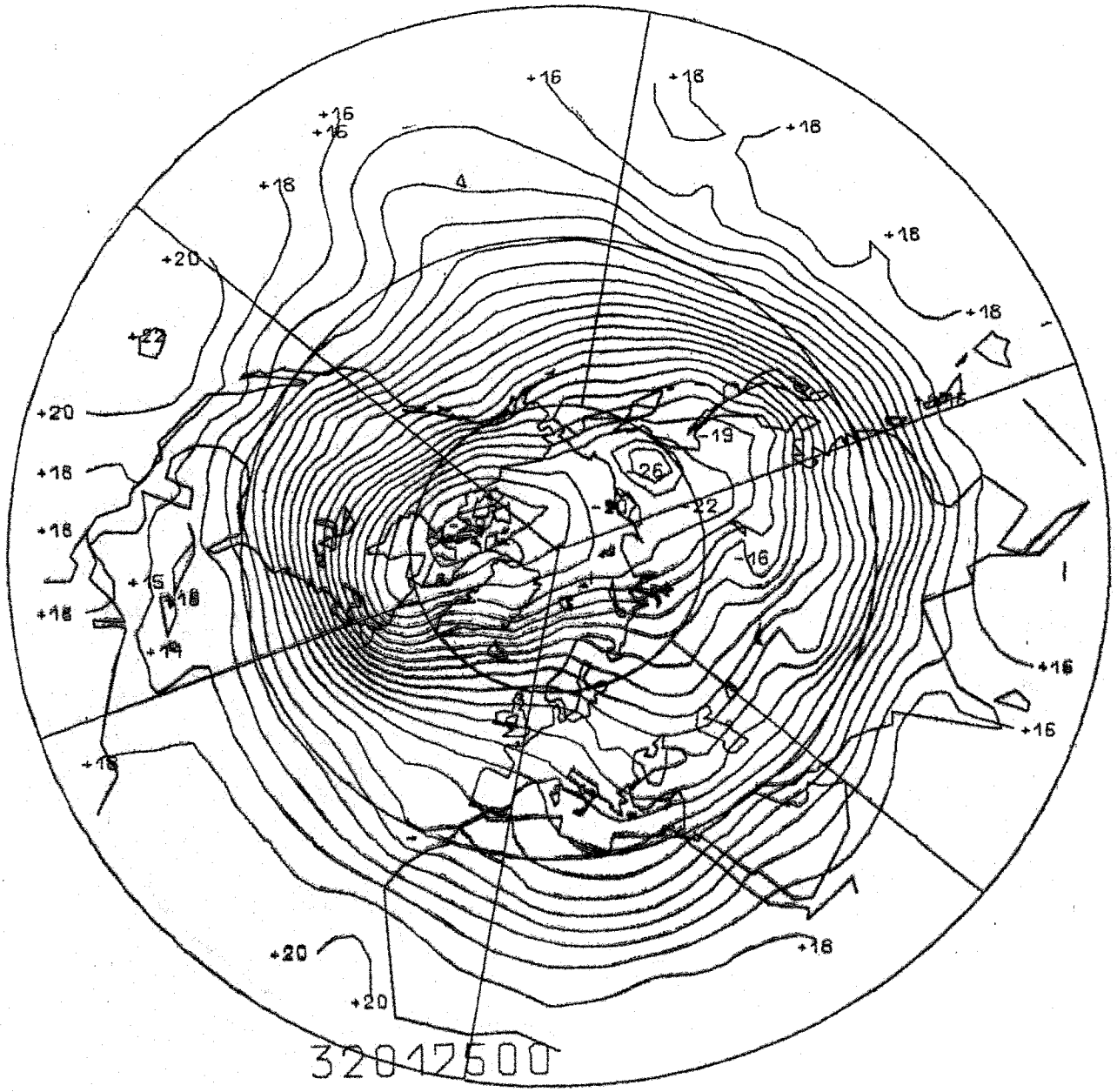


FIG.32a

$[\Phi]_{(t)}$ 850 mb JAN. 1975

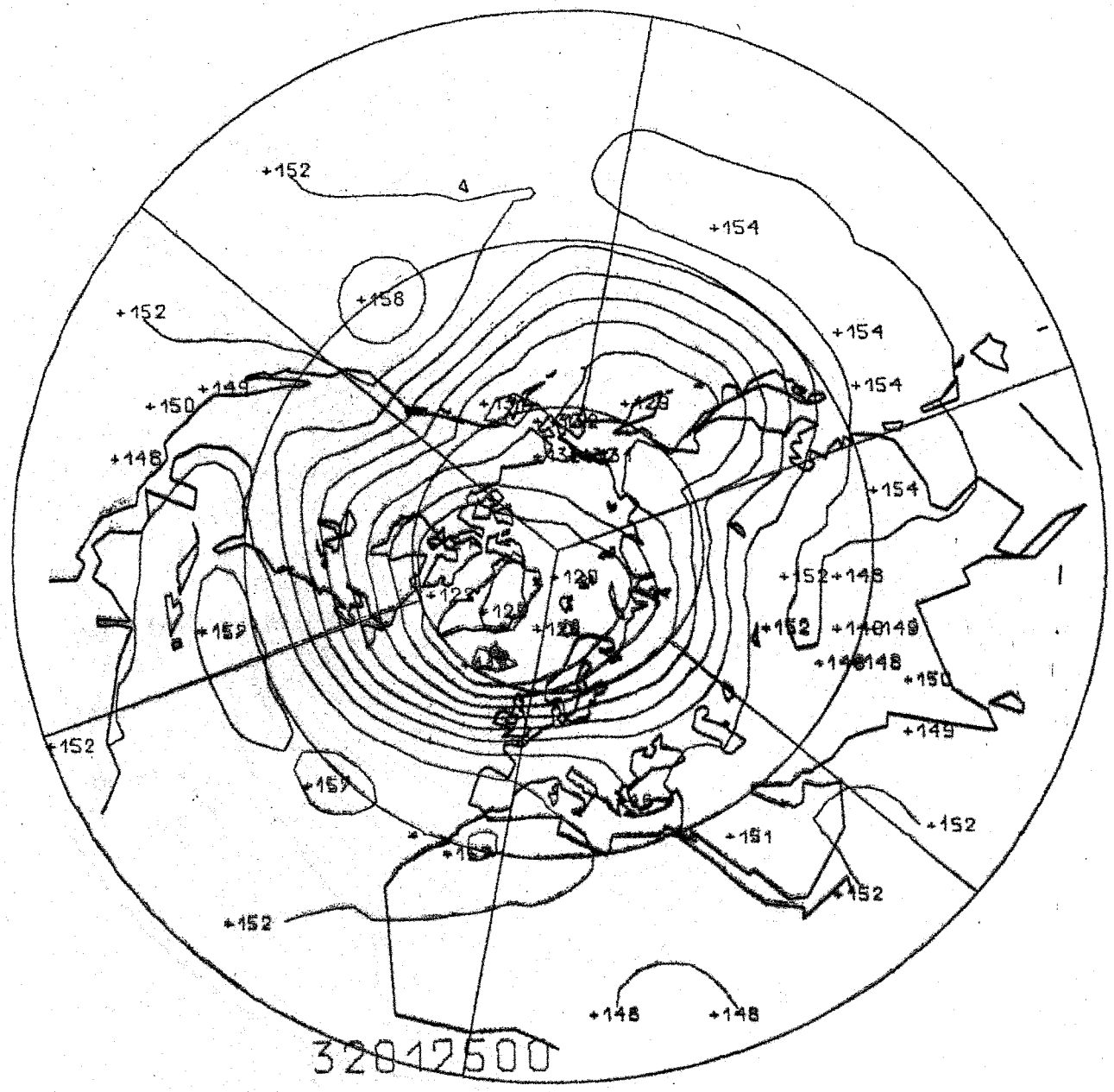


FIG.32 b

$[\Phi]_{(t)}$ 500 mb JAN. 1975

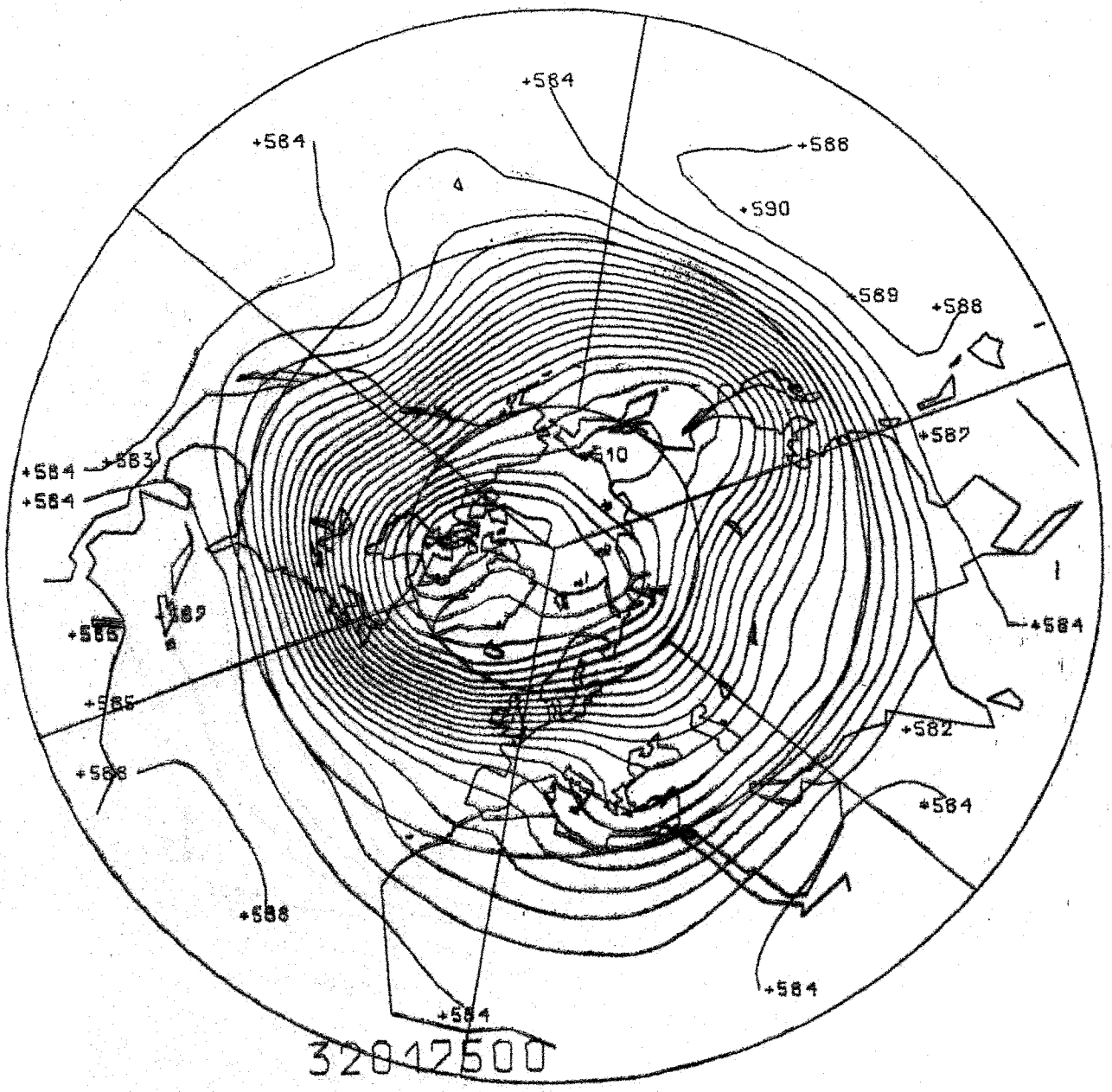


FIG. 33

$[T]_{(t)}$ 300 mb JAN. 1975

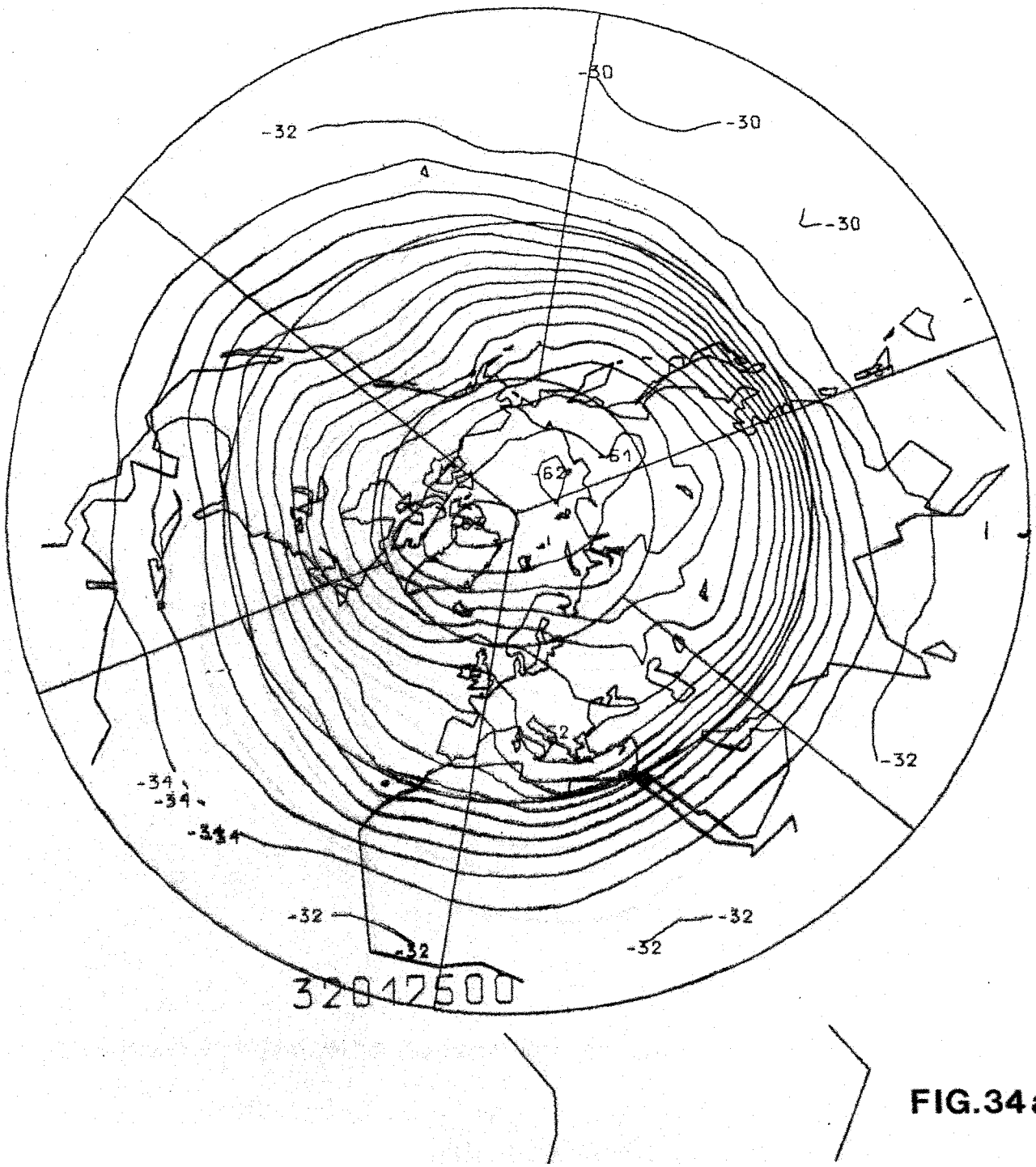


FIG.34a

$[\Phi]_{(t)}$ 300 mb JAN. 1975

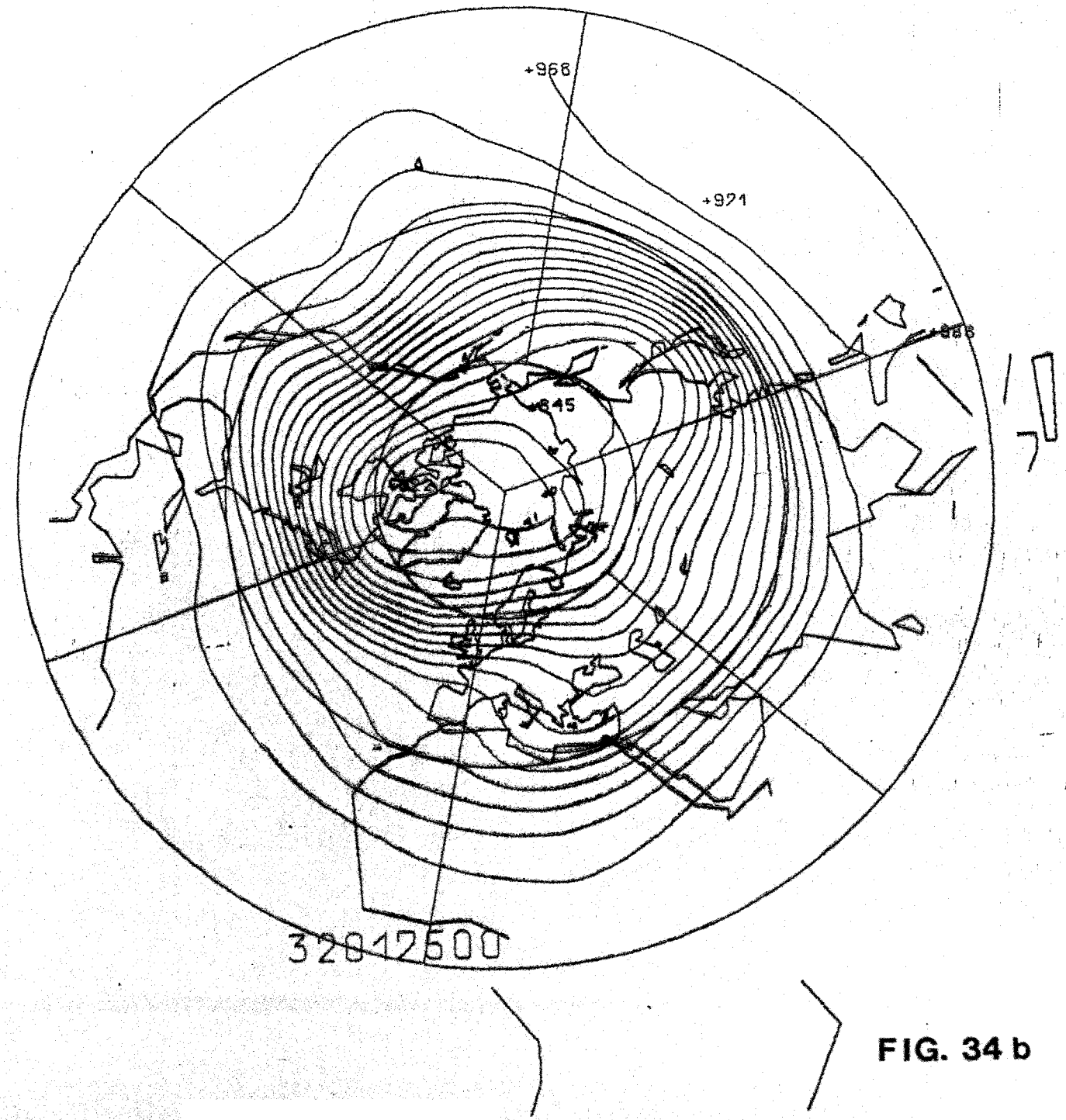


FIG. 34 b

$[T]_{(t)}$ 100 mb JAN. 1975

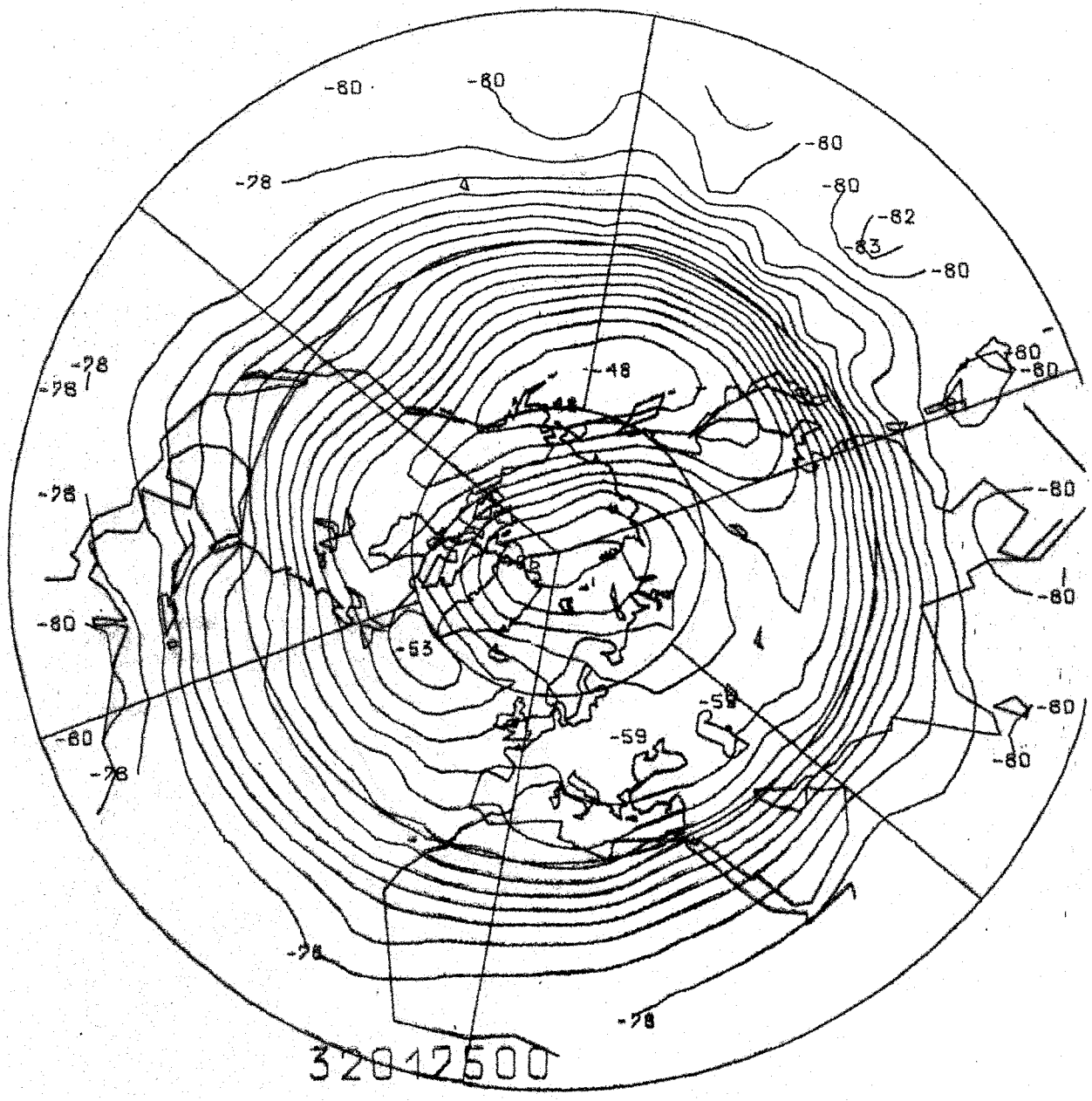


FIG. 35a

$[\Phi]_{(t)}$ **100 mb JAN. 1975**

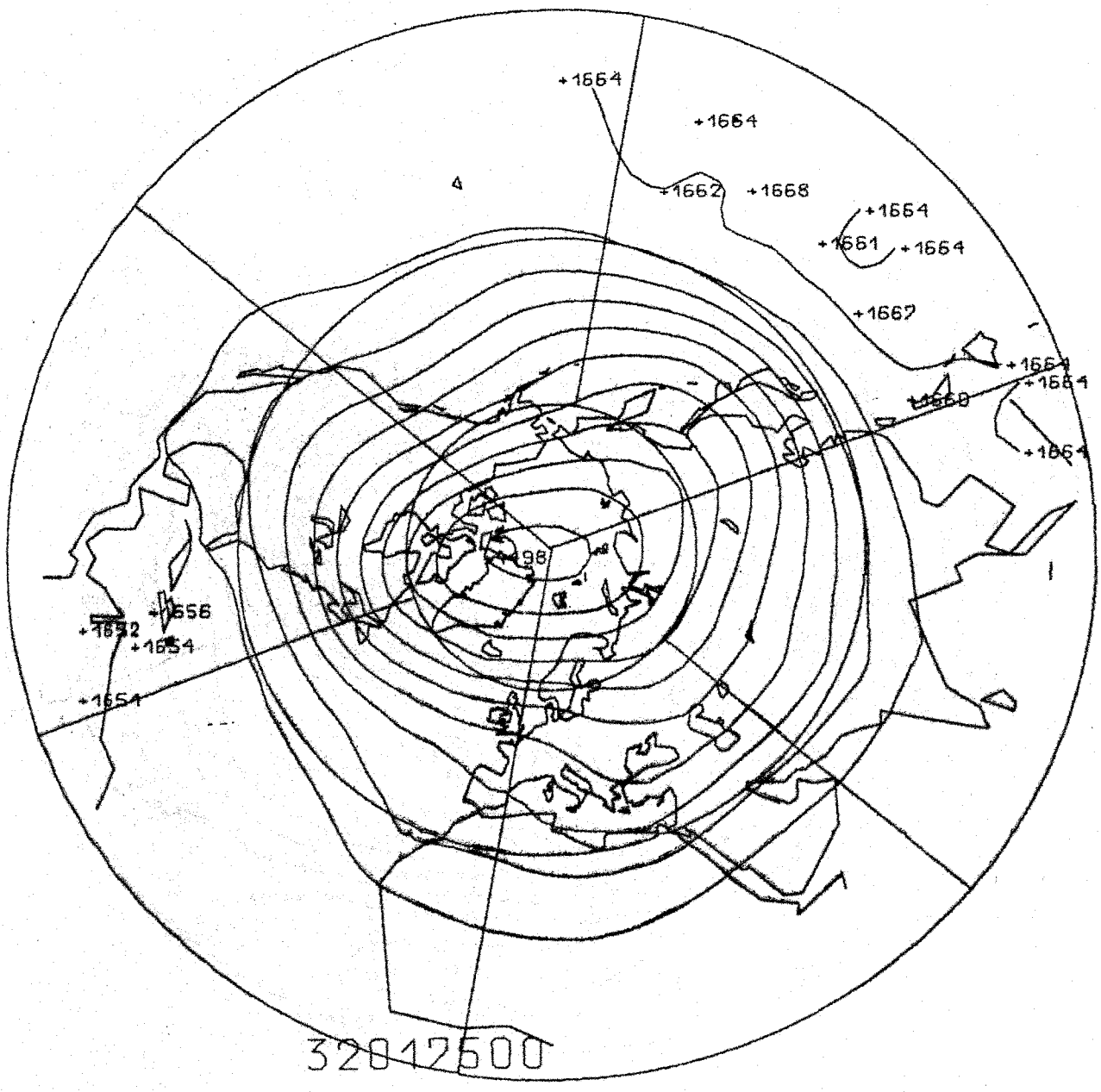


FIG.35 b

$[T]_{(t)}$ 850 mb JAN. 1976

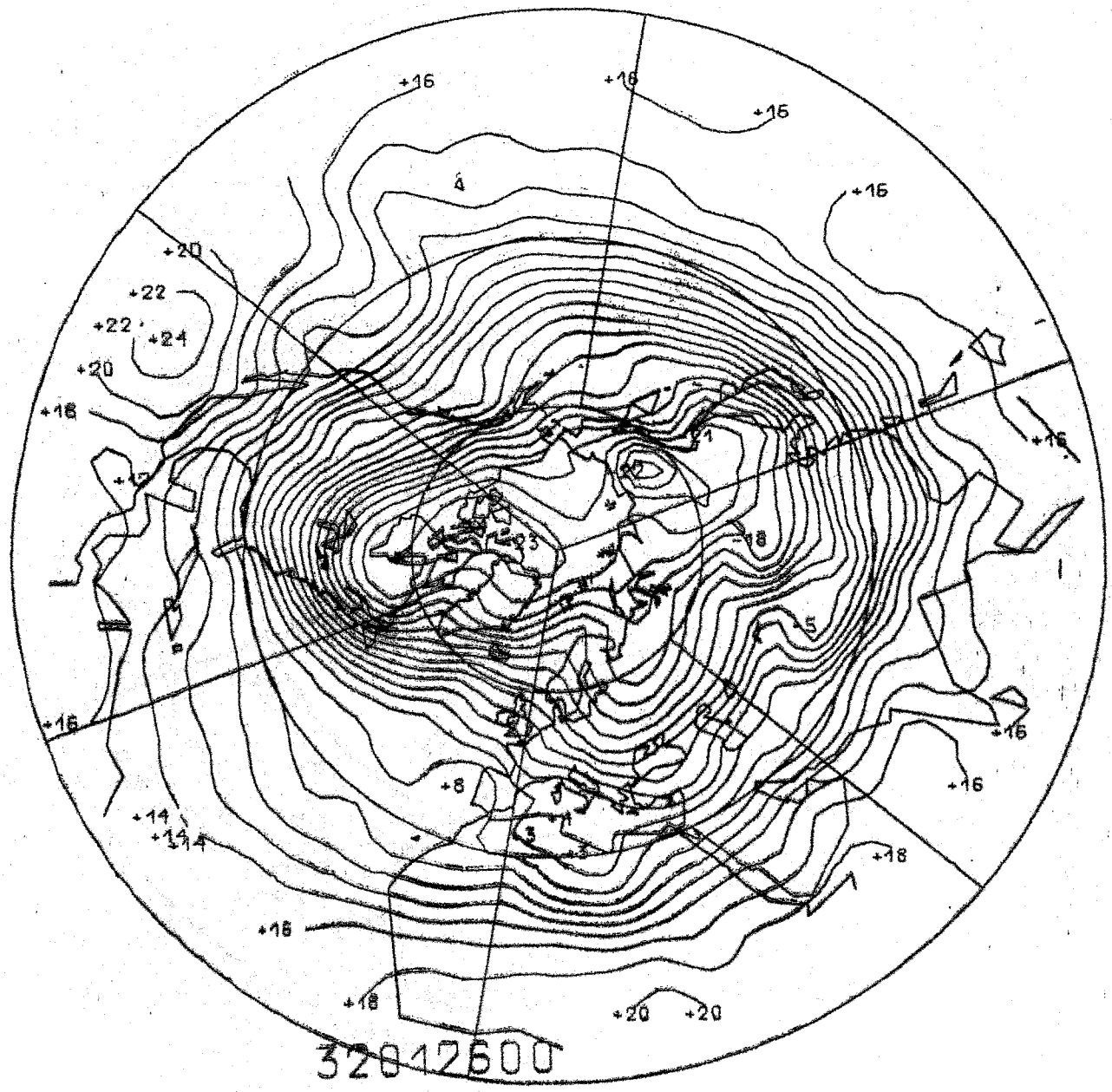


FIG. 36 a

$[\Phi]_{(t)}$ **850 mb JAN. 1976**

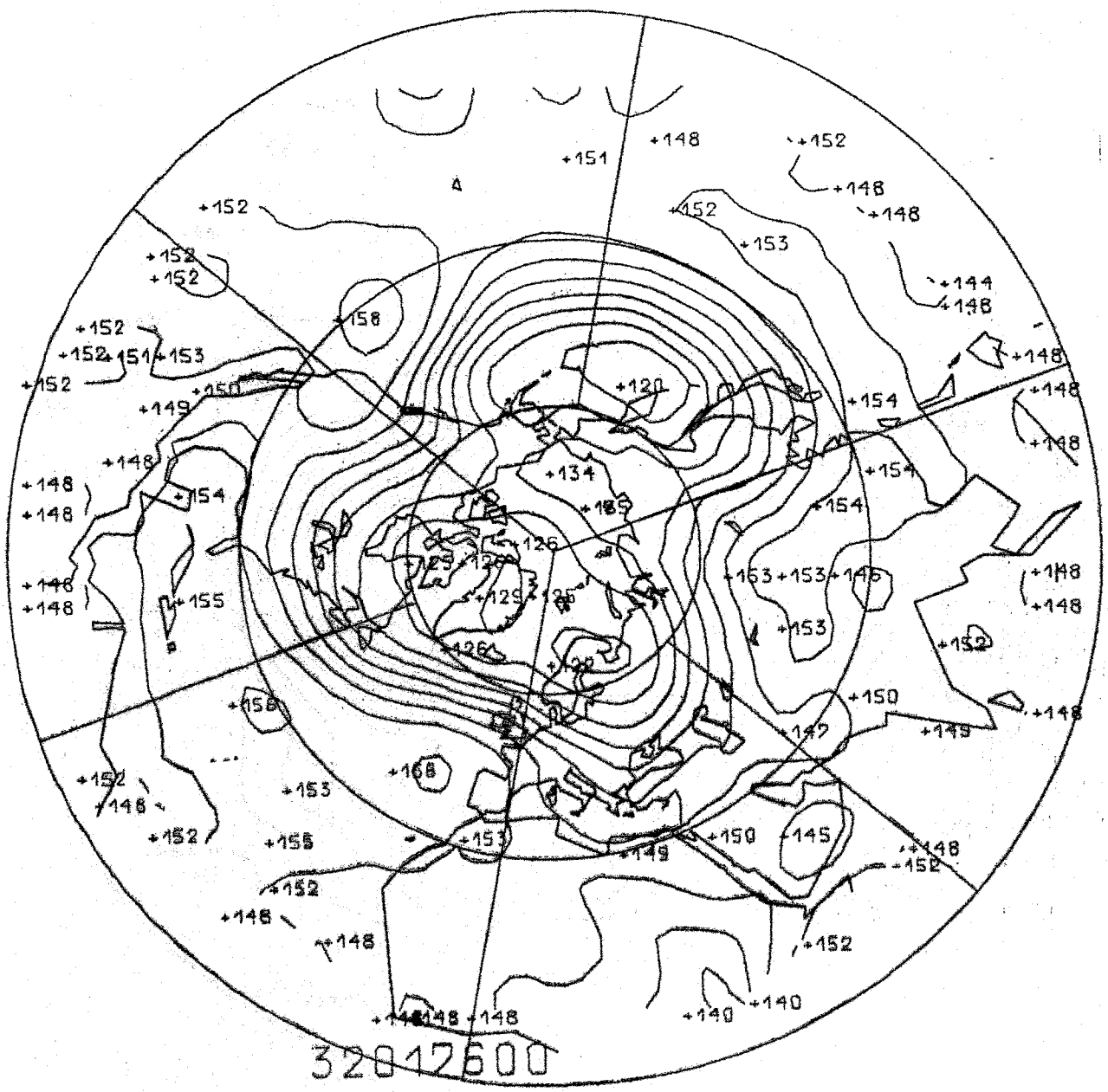


FIG. 36b

$[\Phi]_{(t)}$ 500 mb JAN. 1976

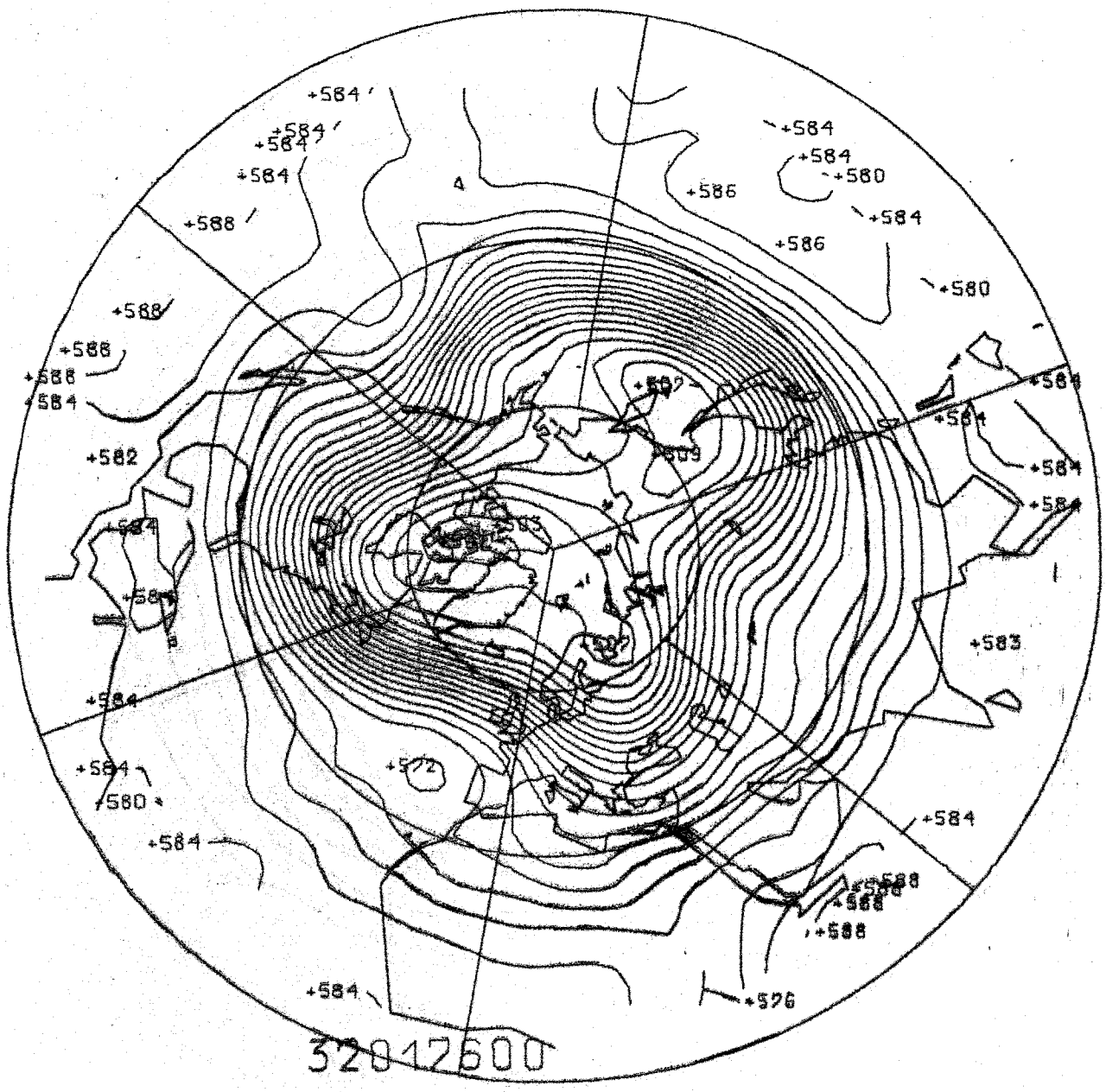


FIG. 37

$[T]_{(t)}$ 300 mb JAN. 1976

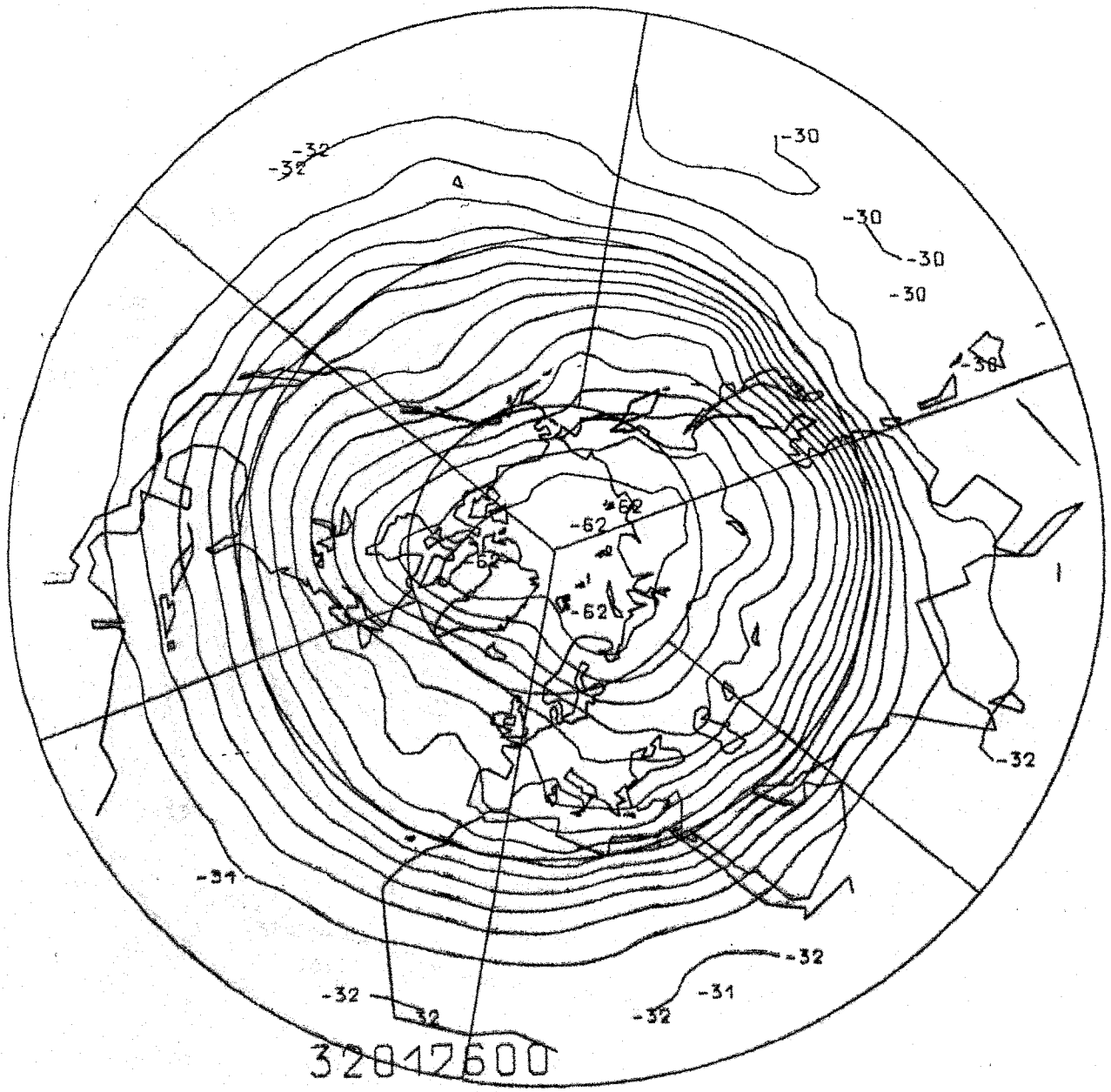


FIG. 38a

$[T]_{(t)}$ **100 mb JAN. 1976**

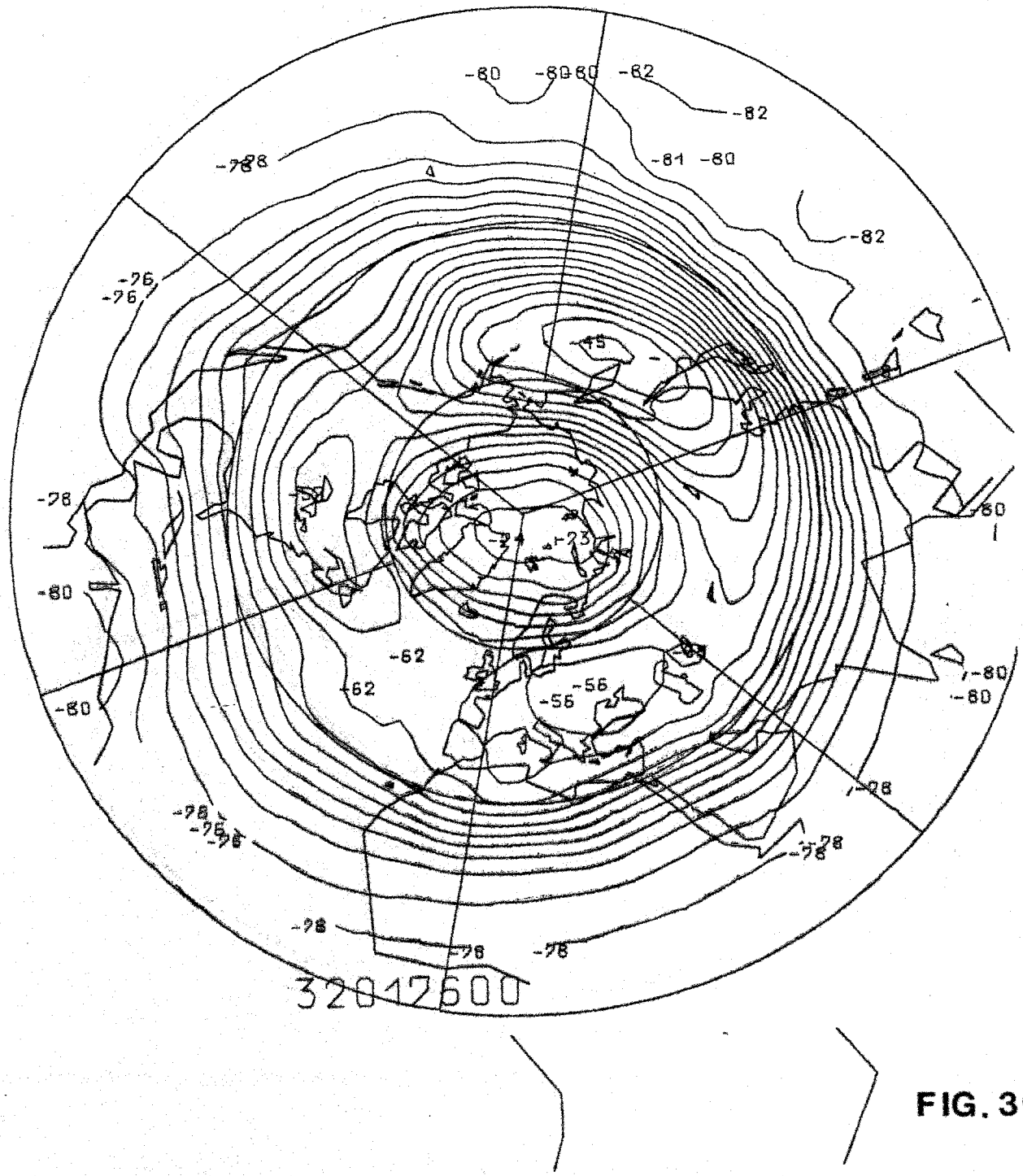


FIG. 39a

$[\Phi]_{(t)}$ 100 mb JAN. 1976

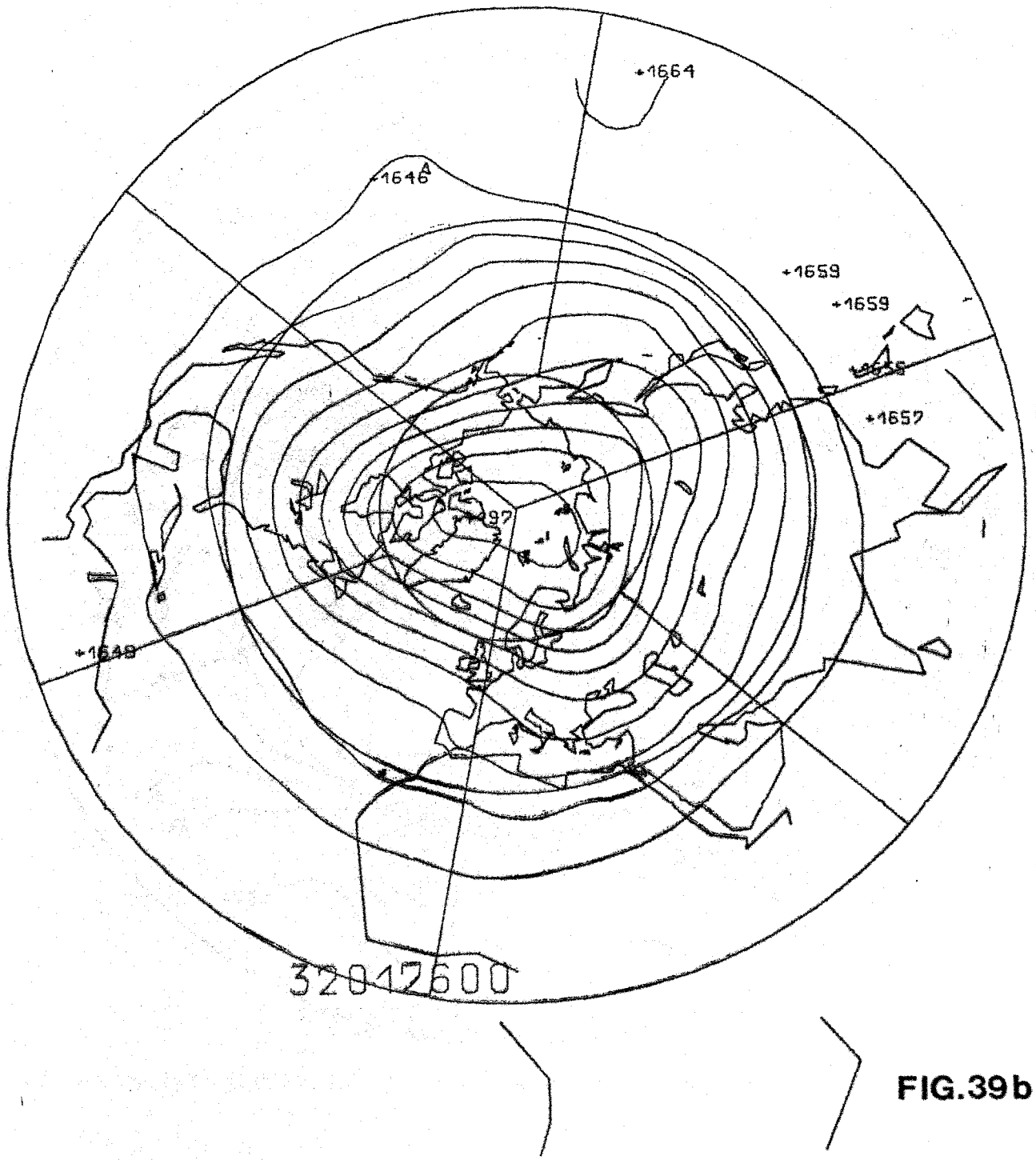


FIG.39b

$[T]_{(t)}$ 850mb JULY 1967

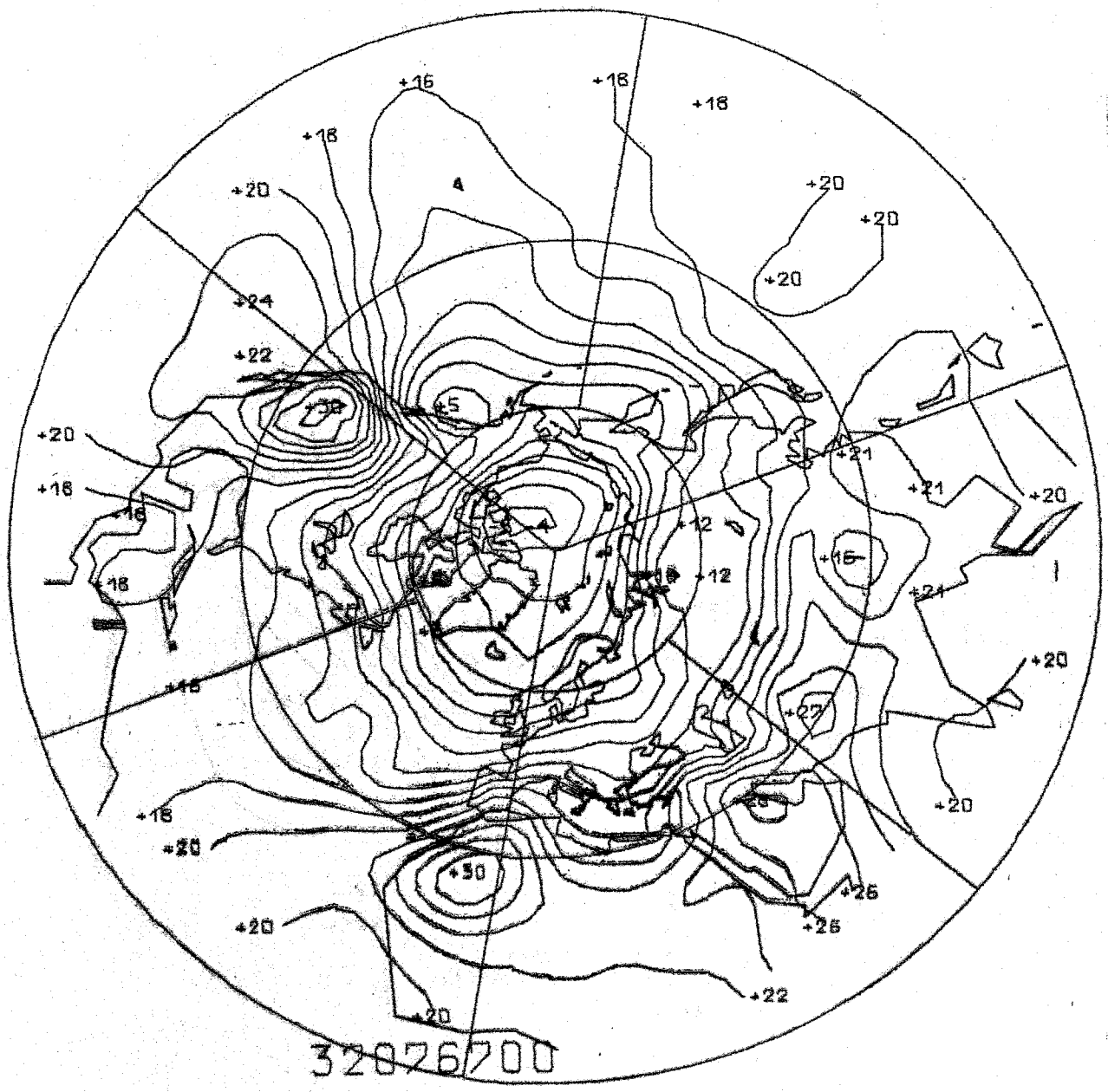


FIG.40a

$[\phi]_{(t)}$ 850 mb JULY 1967

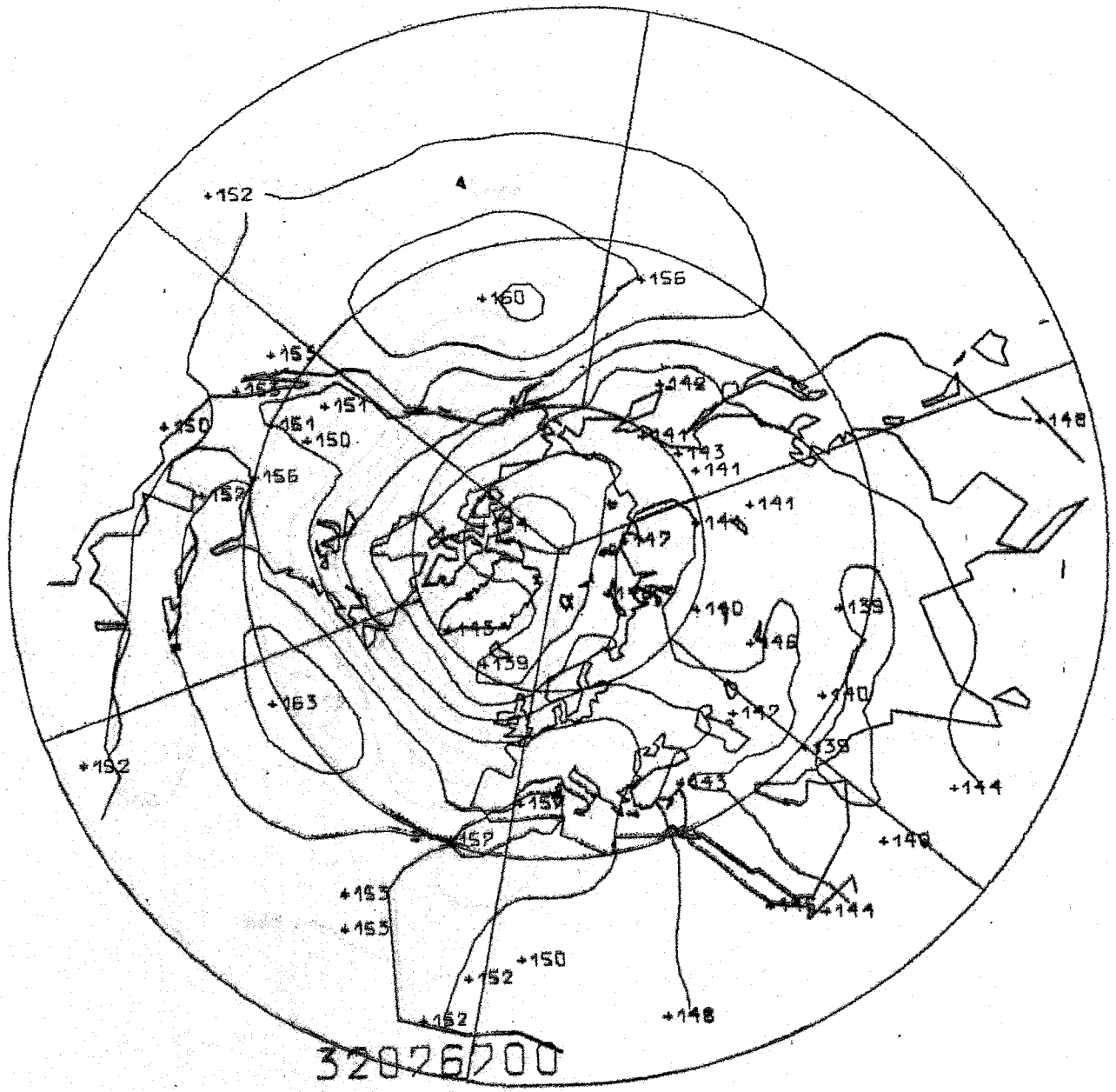


FIG.4Ob

$[\phi]_{(t)}$ 500mb JULY 1967

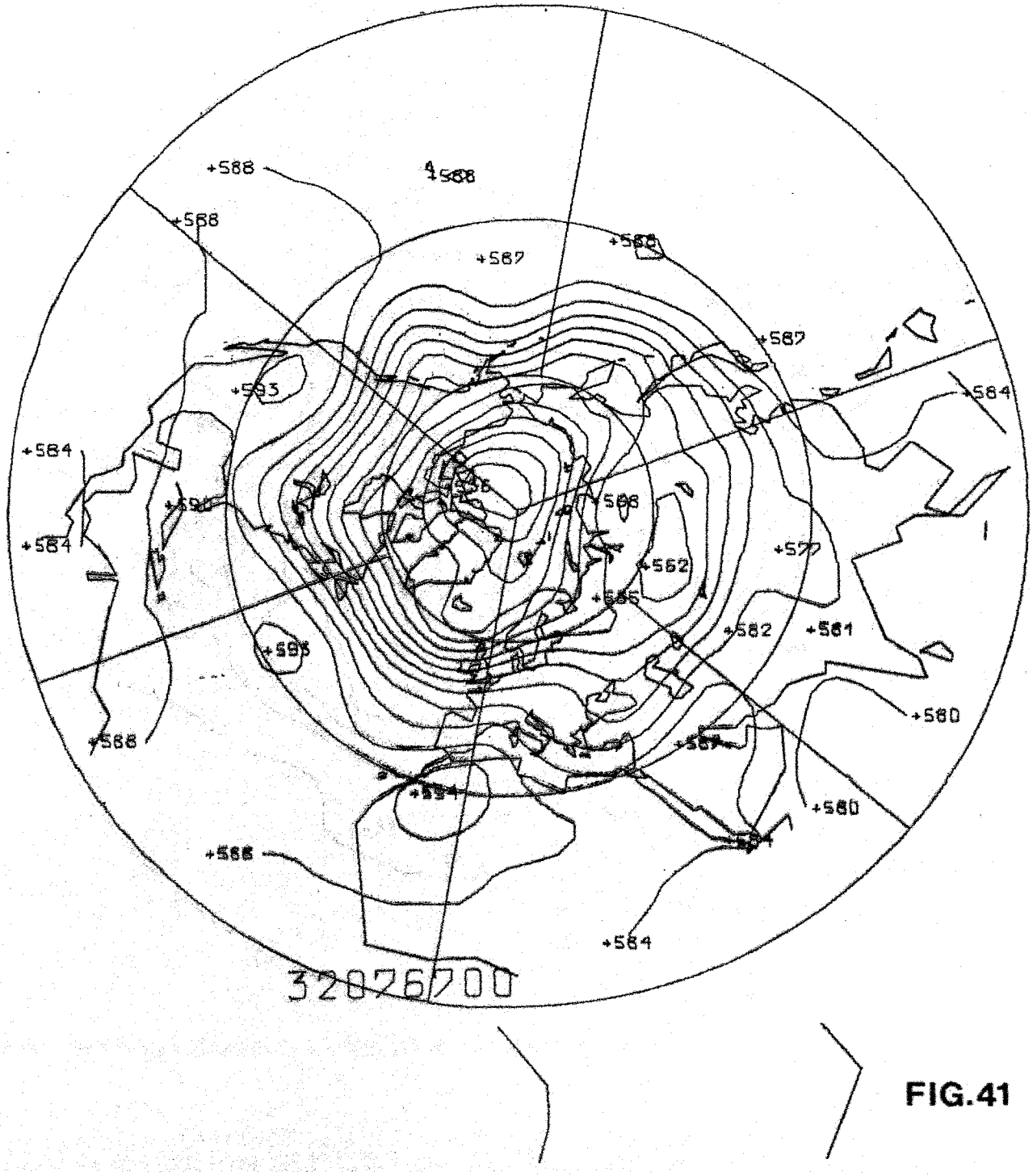


FIG.41

$[T]_{(t)}$ 300mb JULY 1967

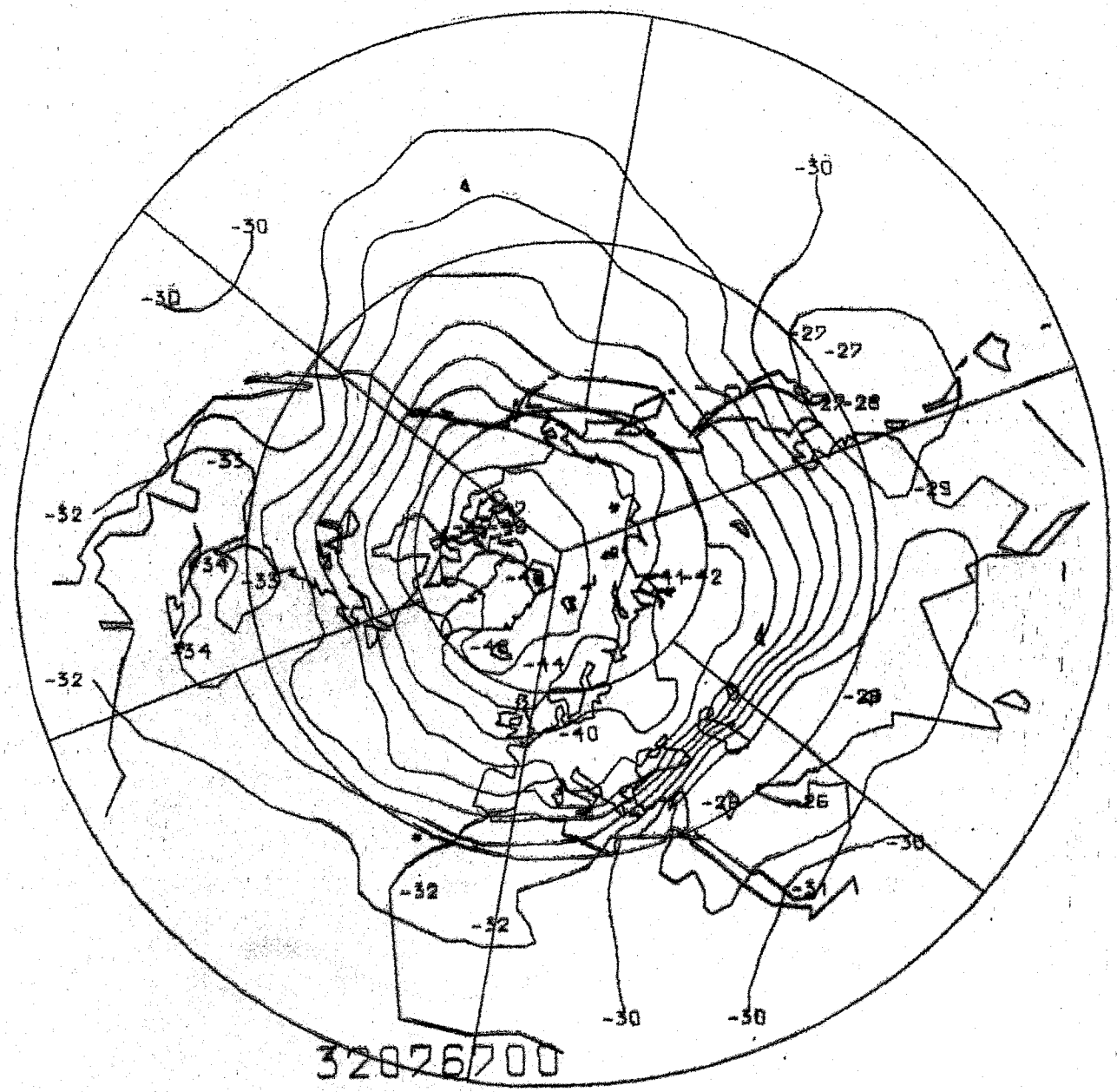


FIG.42a

$[\Phi]_{(t)}$ 300 mb JULY 1967

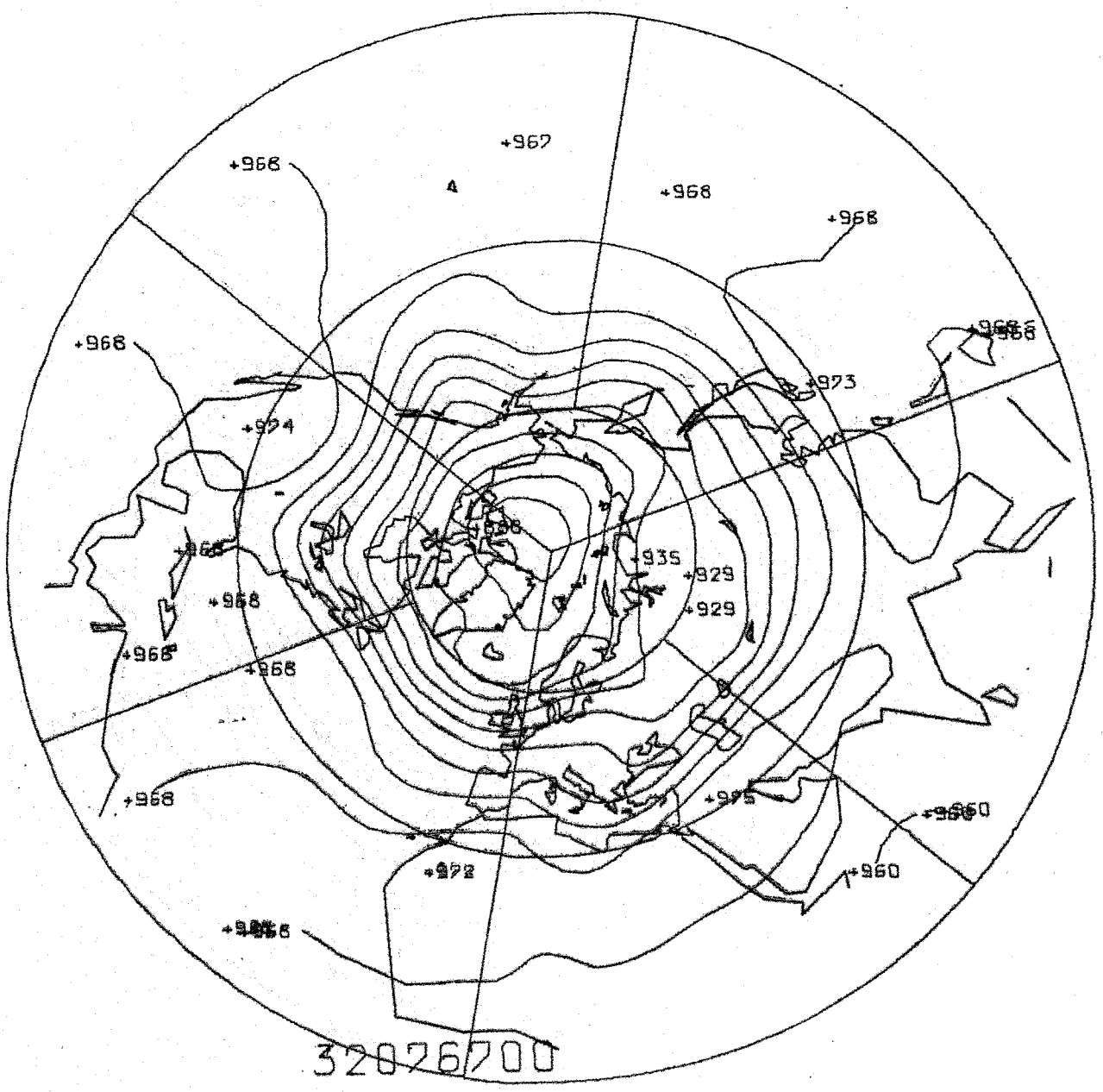
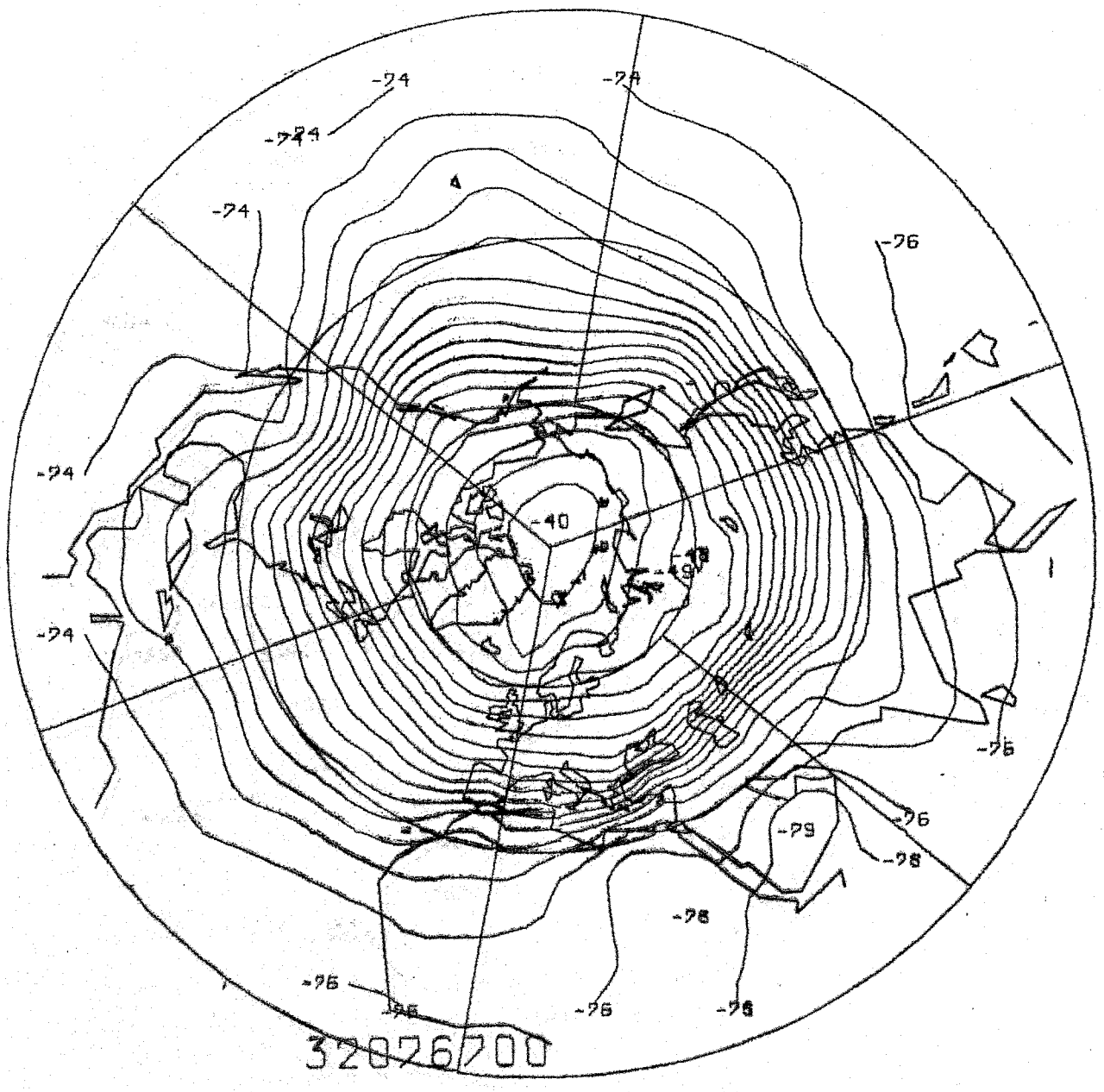


FIG.42b

$[T]_{(t)}$ 100mb JULY 1967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$[\phi]_{(t)}$ 100 mb JULY 1967

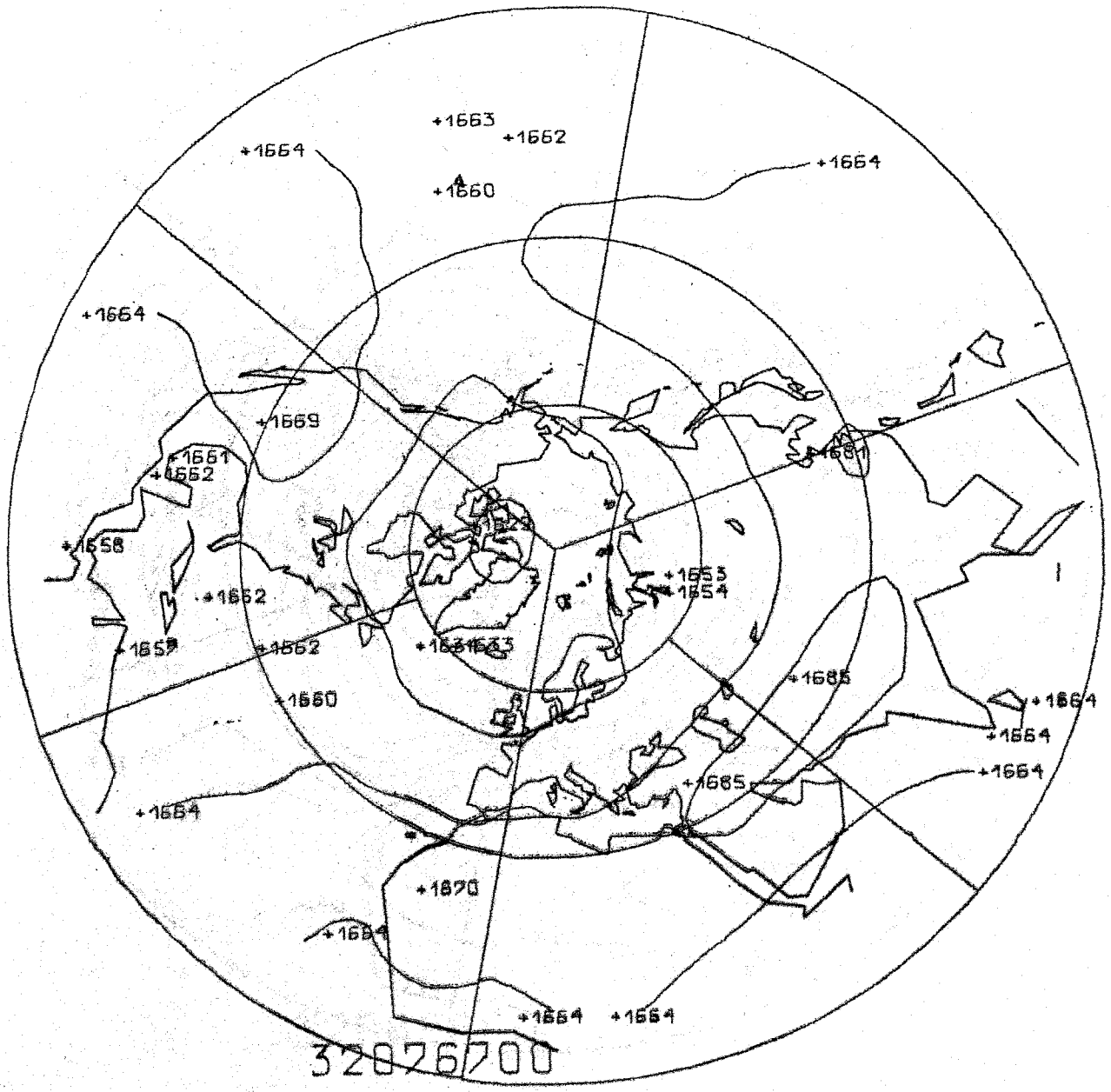


FIG. 43b

$[T]_{(t)}$ 850mb JULY 1968

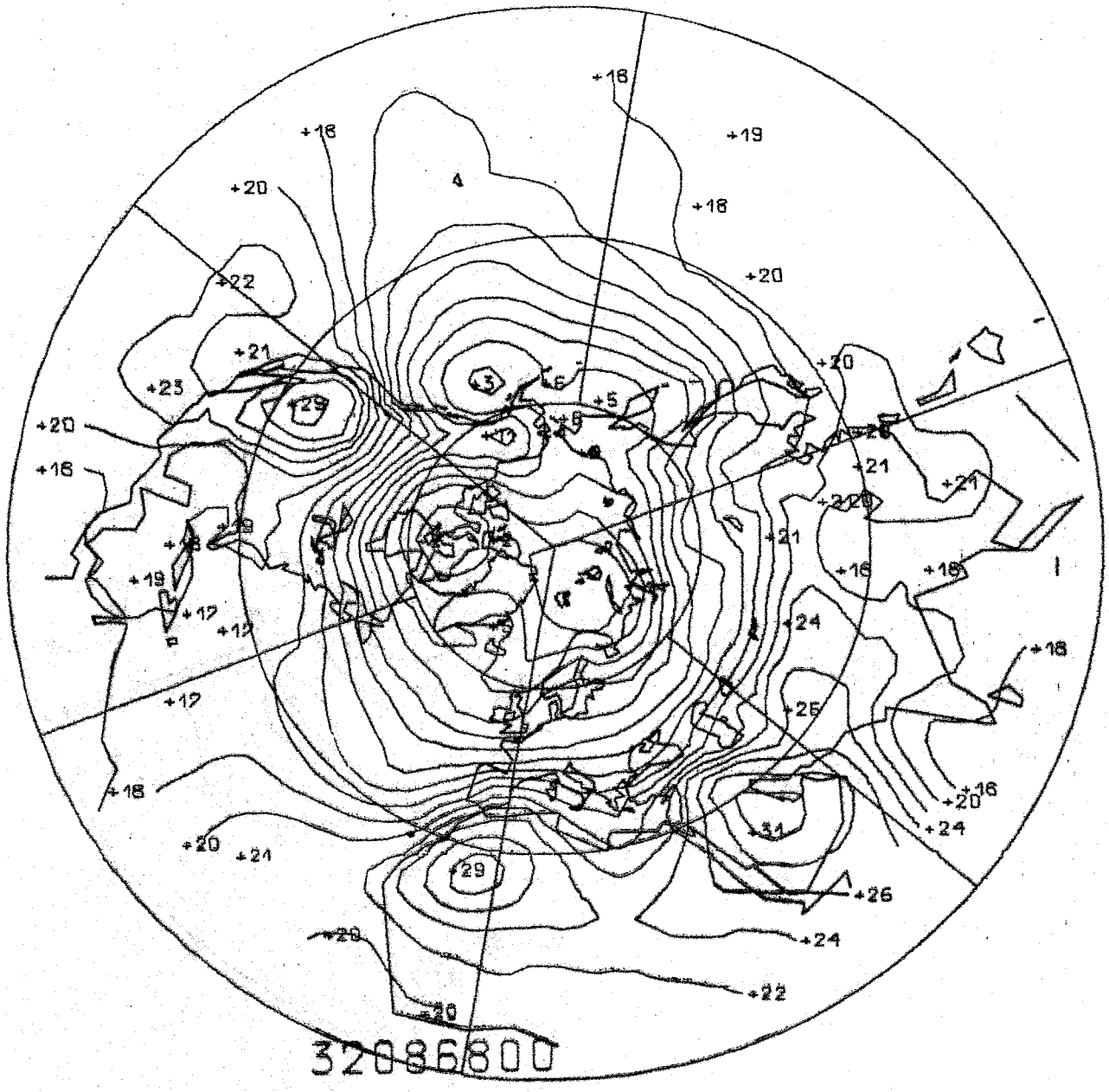


FIG.44a

$[\phi]_{(t)}$ 850mb JULY 1968

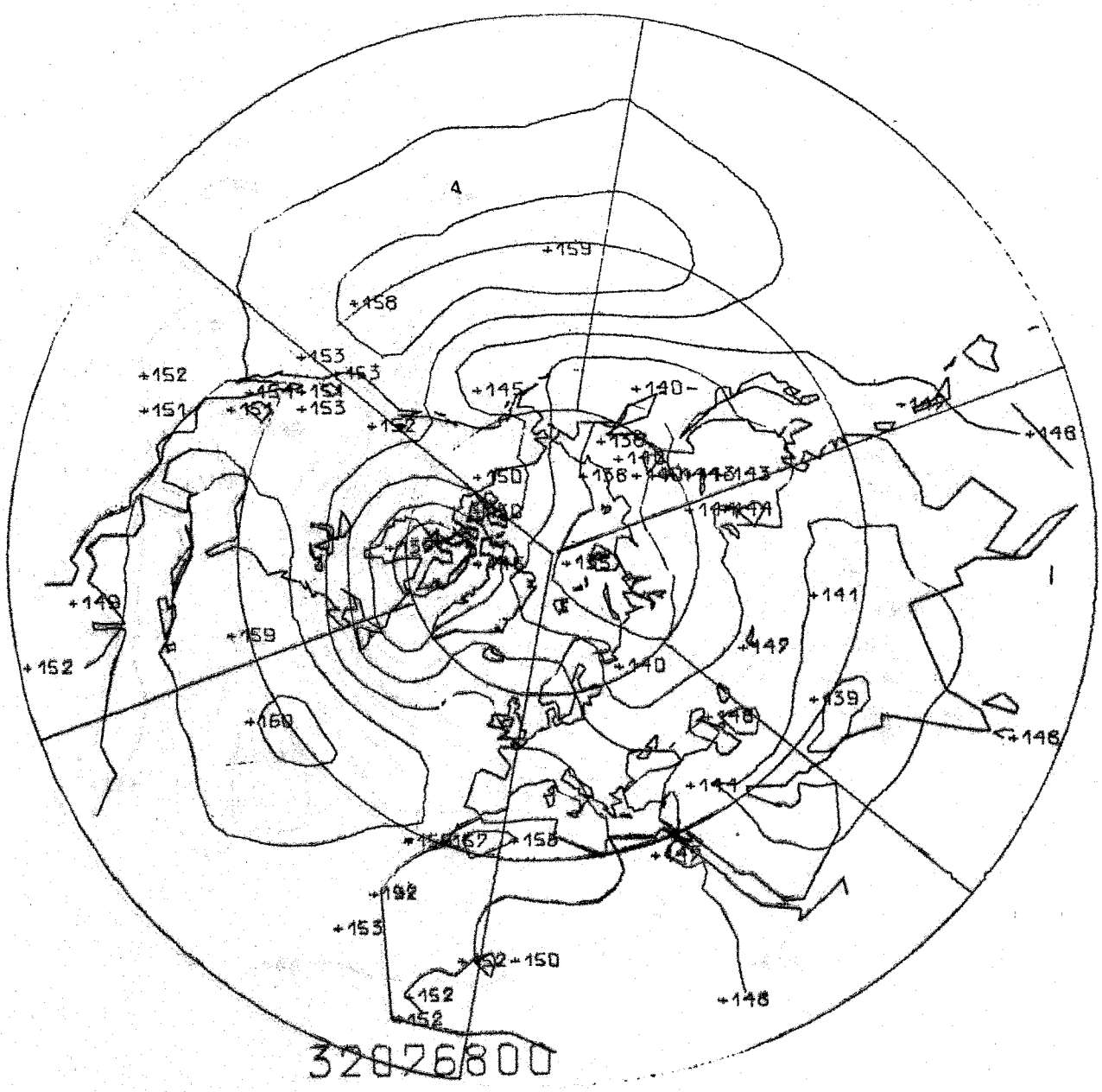


FIG.44b

$[\phi]_{(t)}$ 500mb JULY 1968

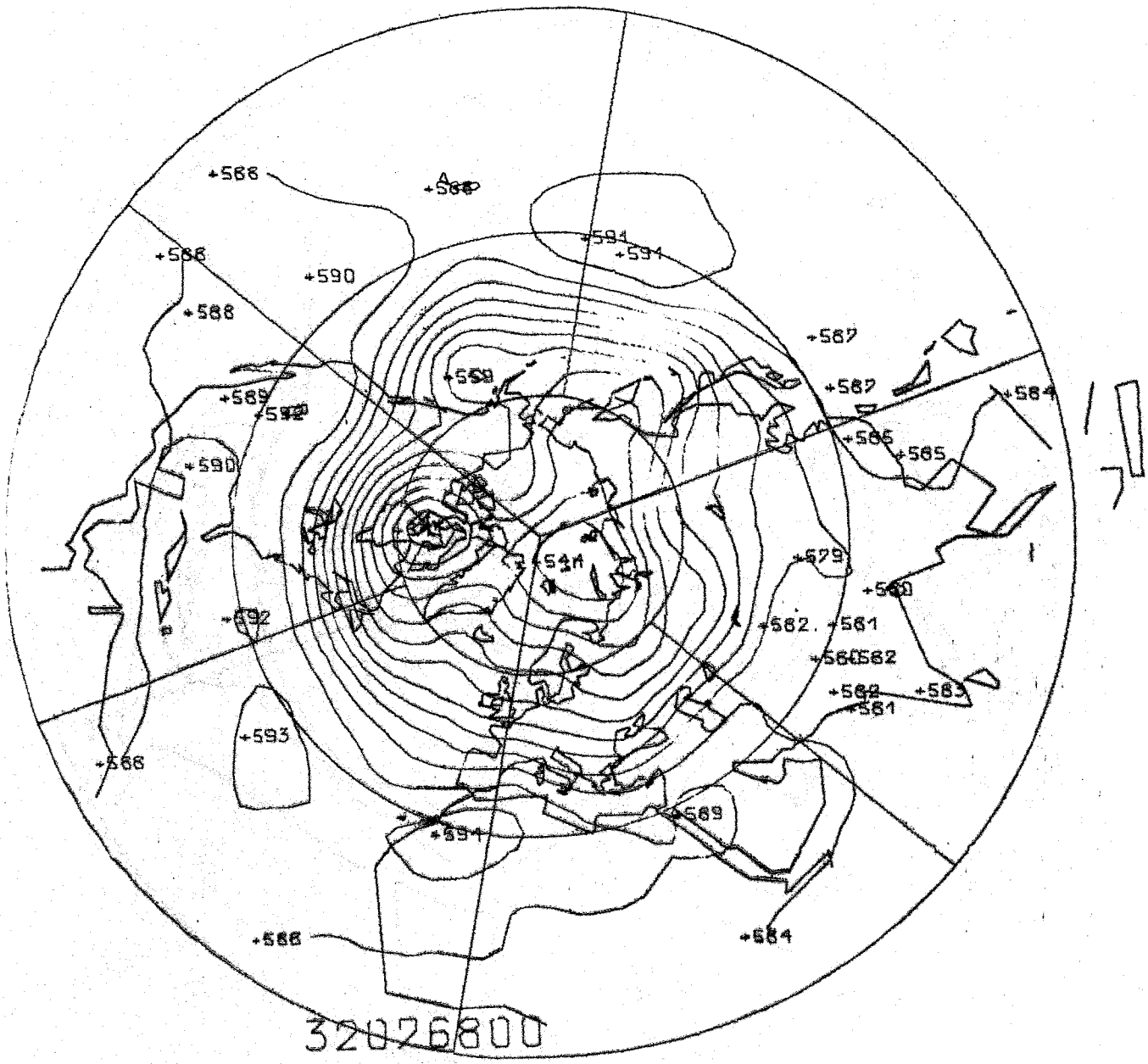


FIG. 45

$[T]_{(t)}$ 300mb JULY 1968

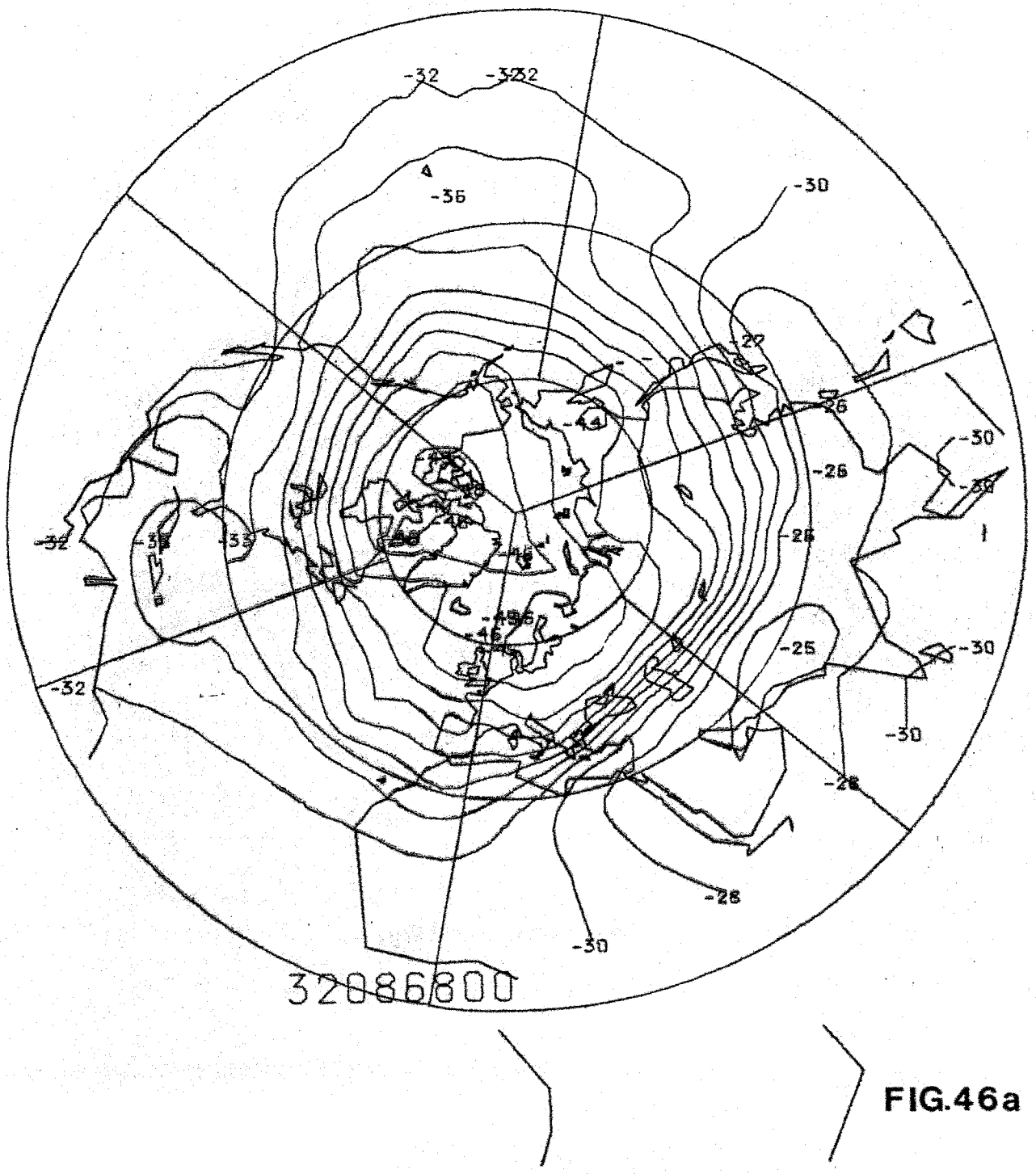


FIG.46a

$[\phi]_{(t)}$ 300mb JULY 1968

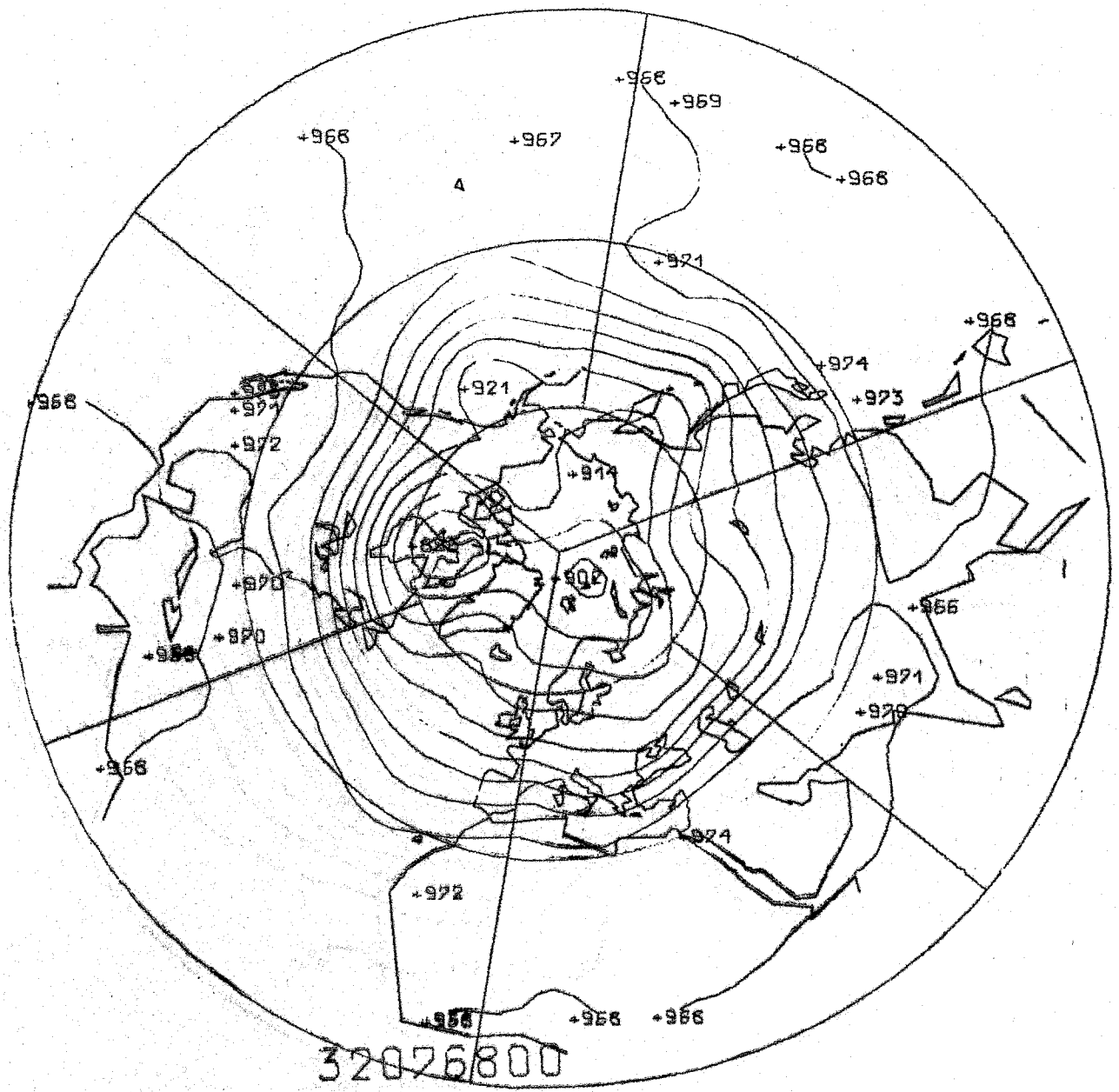
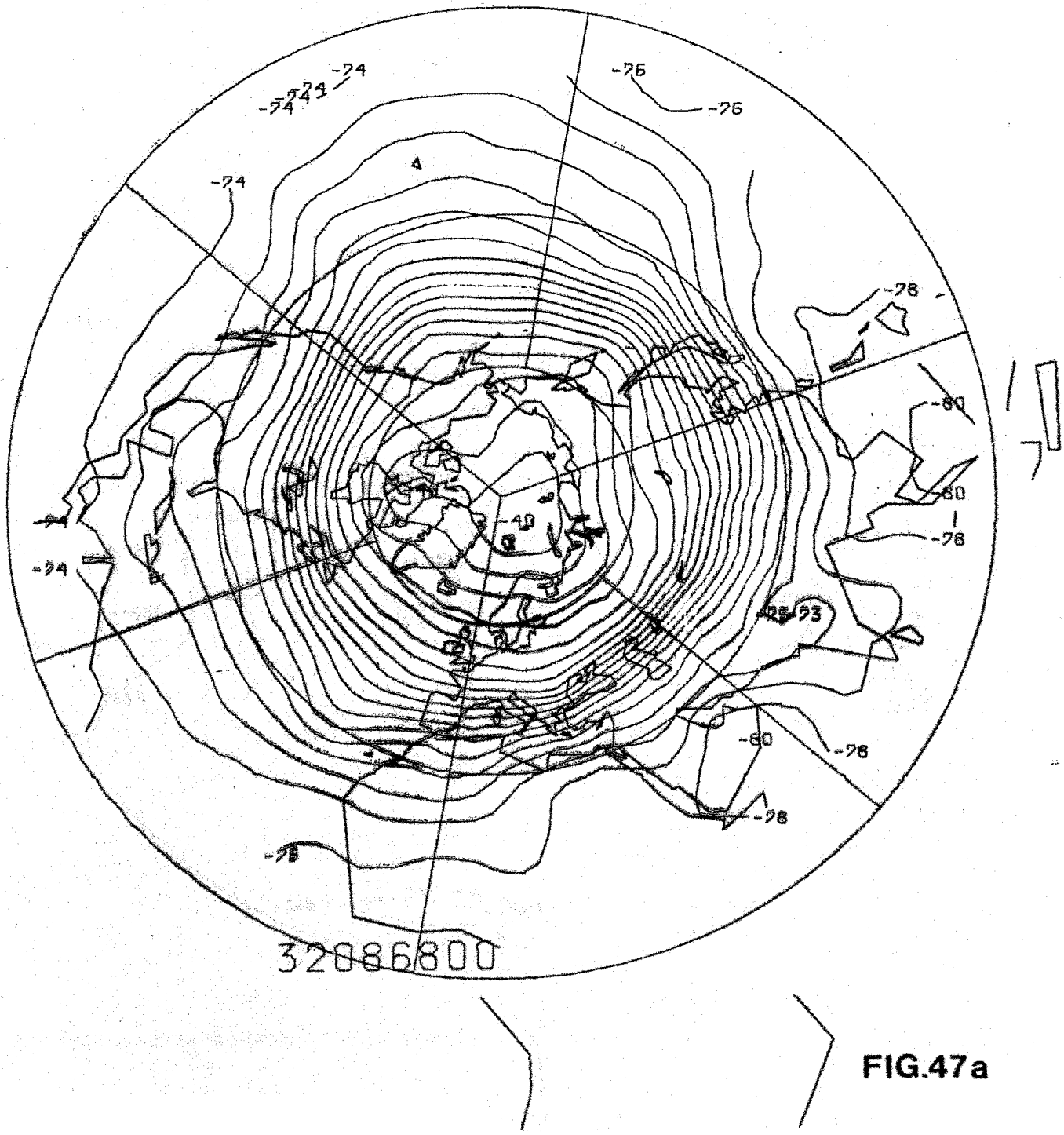


FIG. 46b

$[T]_{(t)}$ 100mb JULY 1968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-24
-24

$[\phi]_{(t)}$ 100 mb JULY 1968

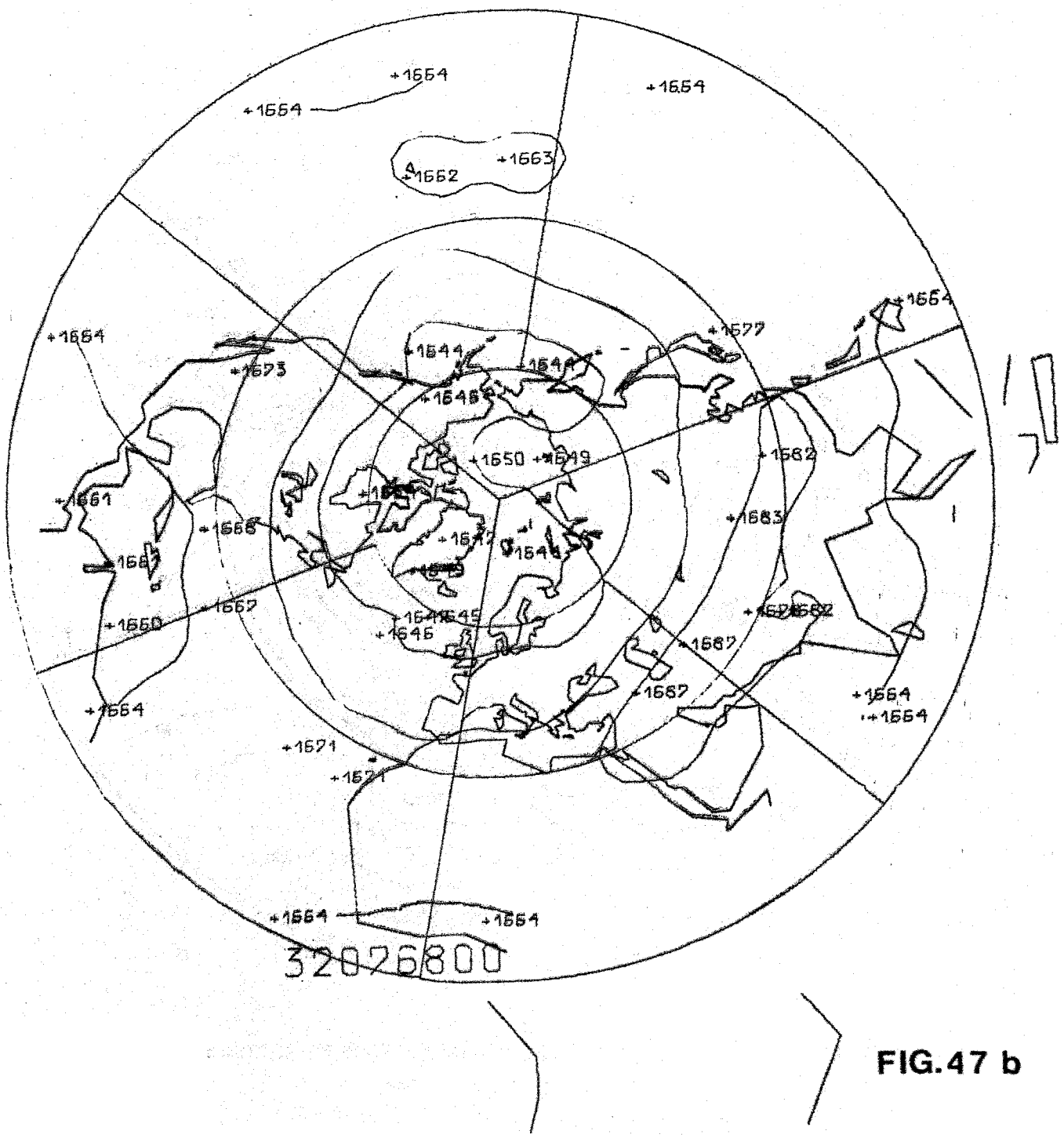

FIG. 47 b

$[T]_{(t)}$ 850mb JULY 1969

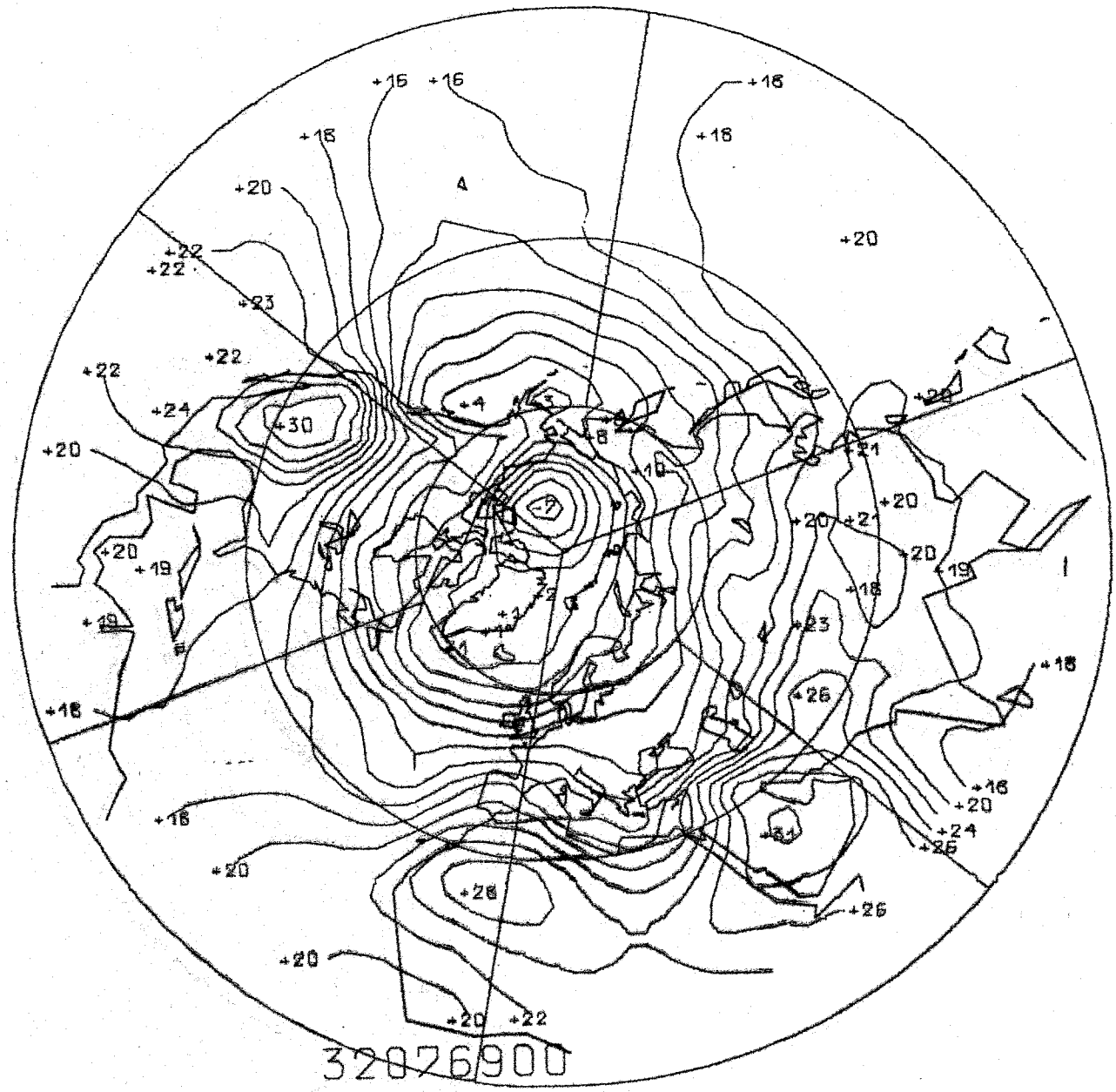

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FIG.48a

$[\phi]_{(t)}$ 850mb JULY 1969

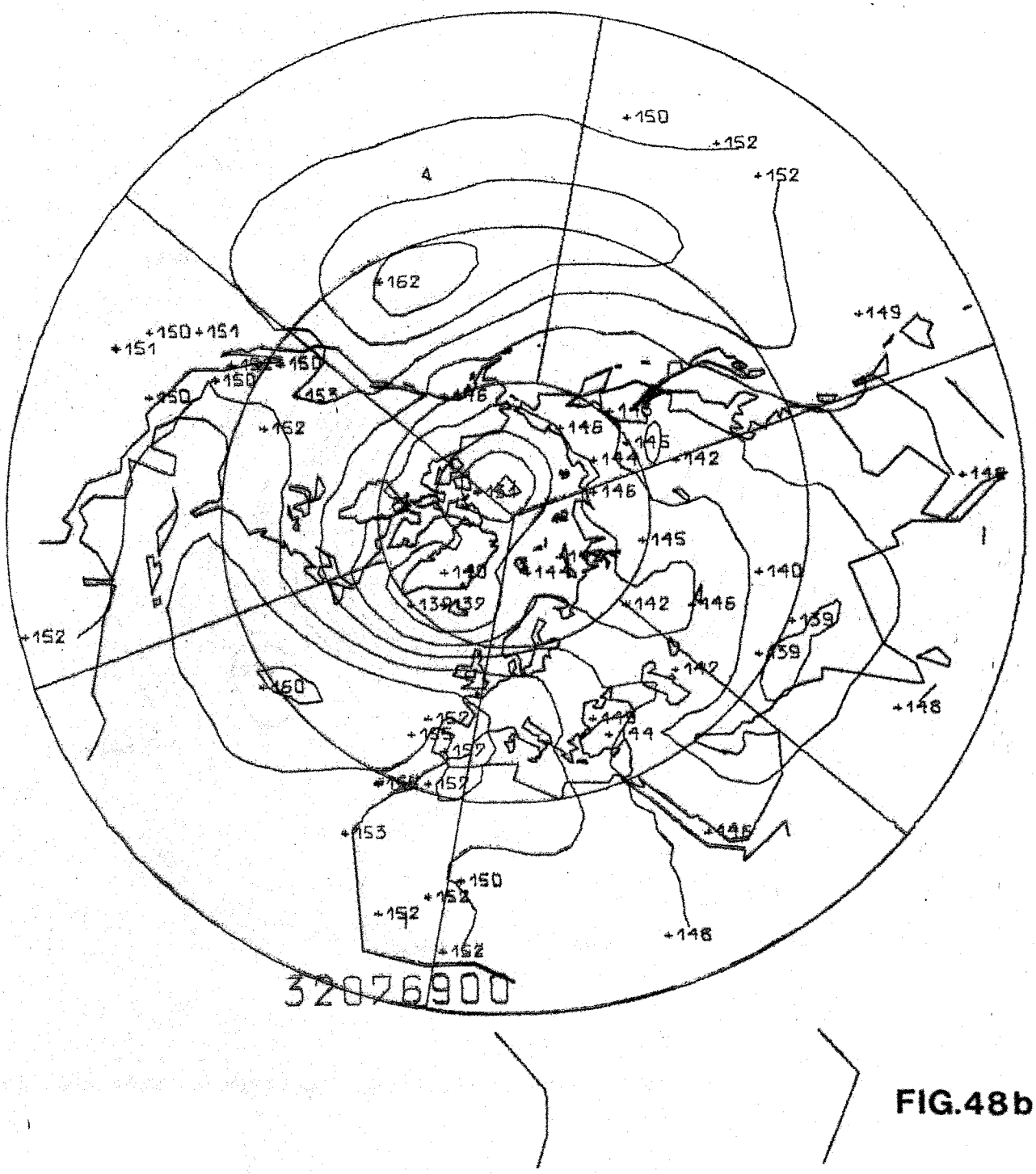


FIG.48b

$[\phi]_{(t)}$ 500mb JULY 1969

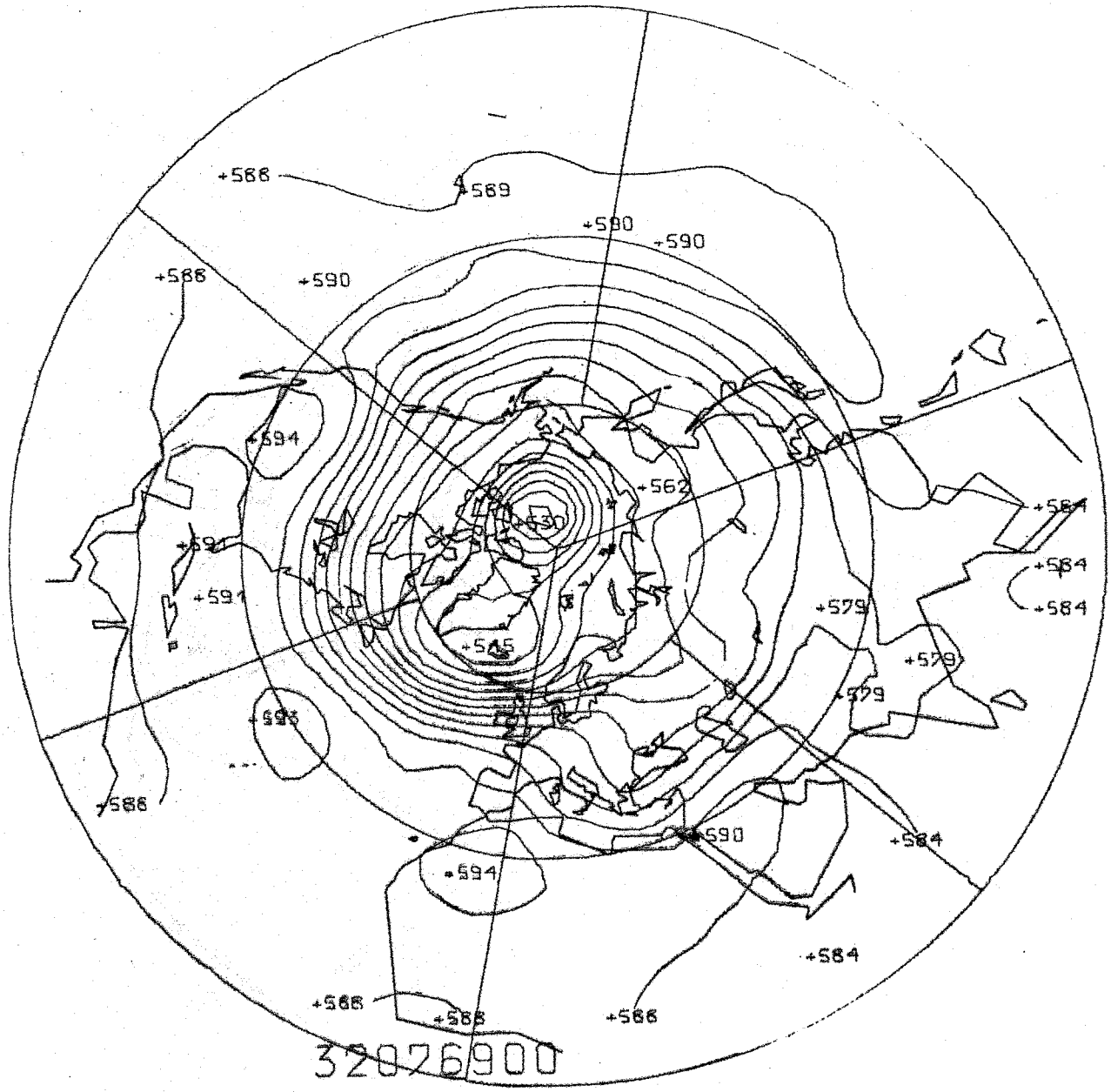


FIG. 49

$[T]_{(t)}$ 300mb JULY 1969

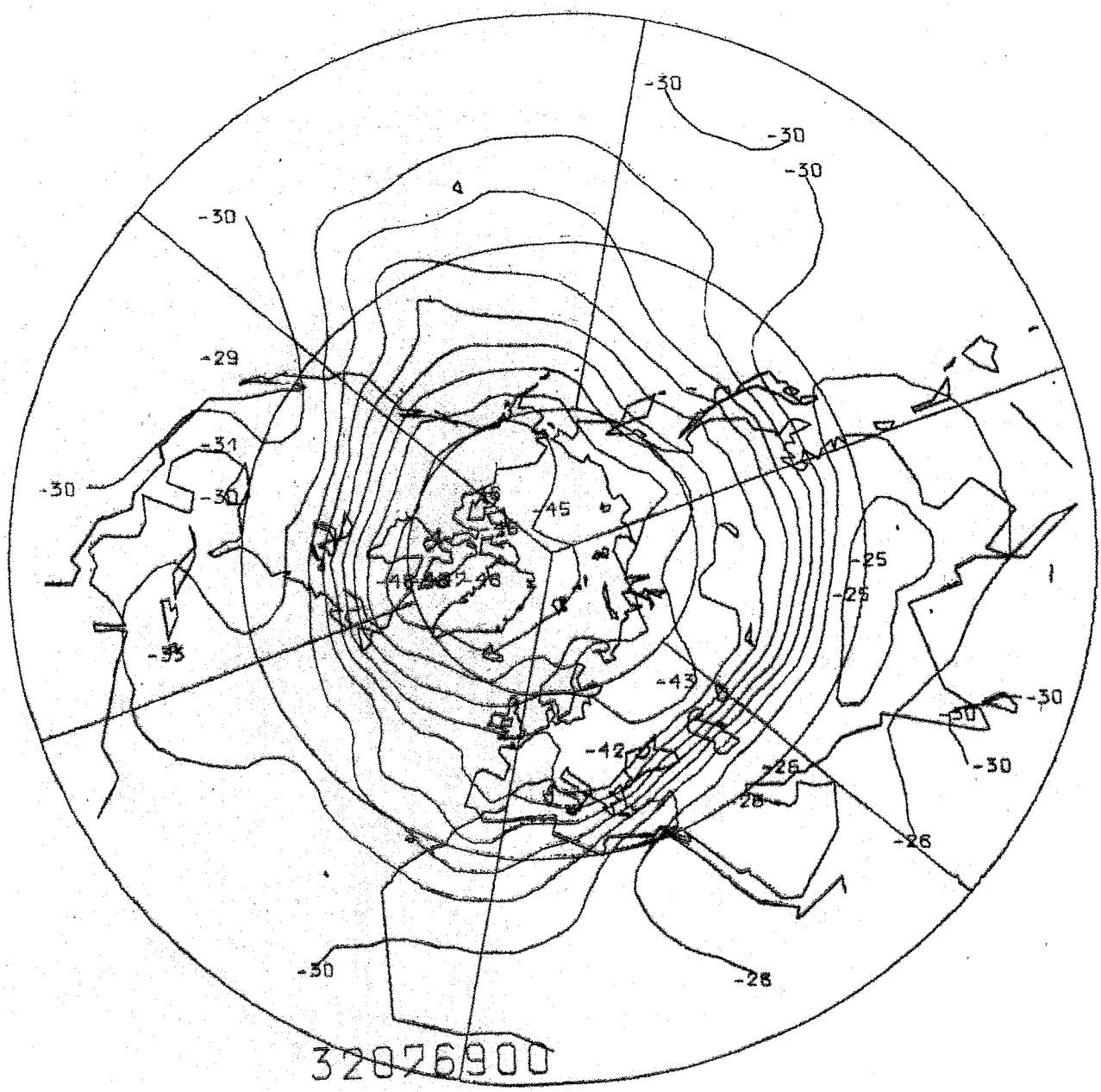
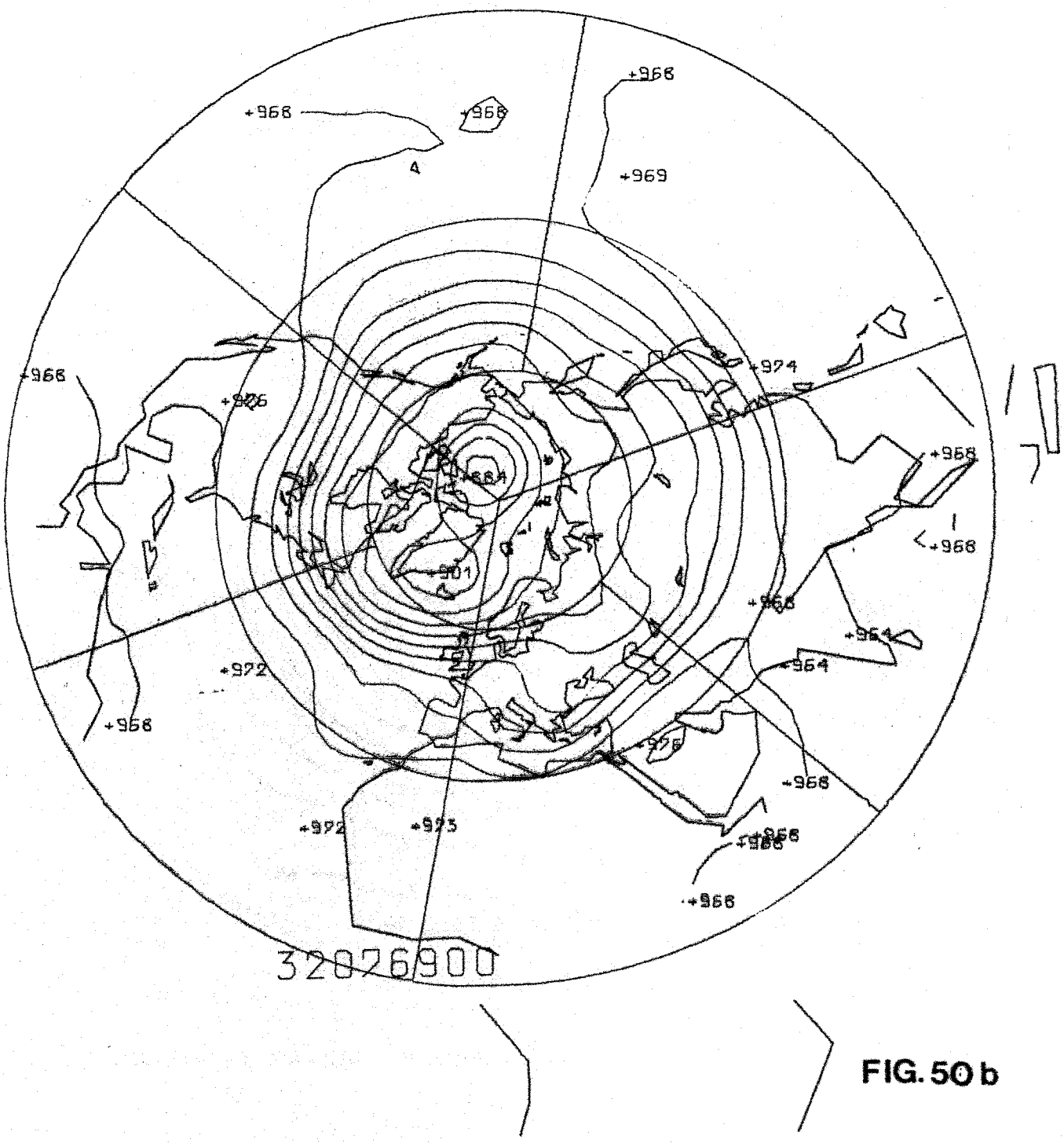


FIG.50 a

$[\phi]_{(t)}$ 300mb JULY 1969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$[T]_{(t)}$ 100 mb JULY 1969

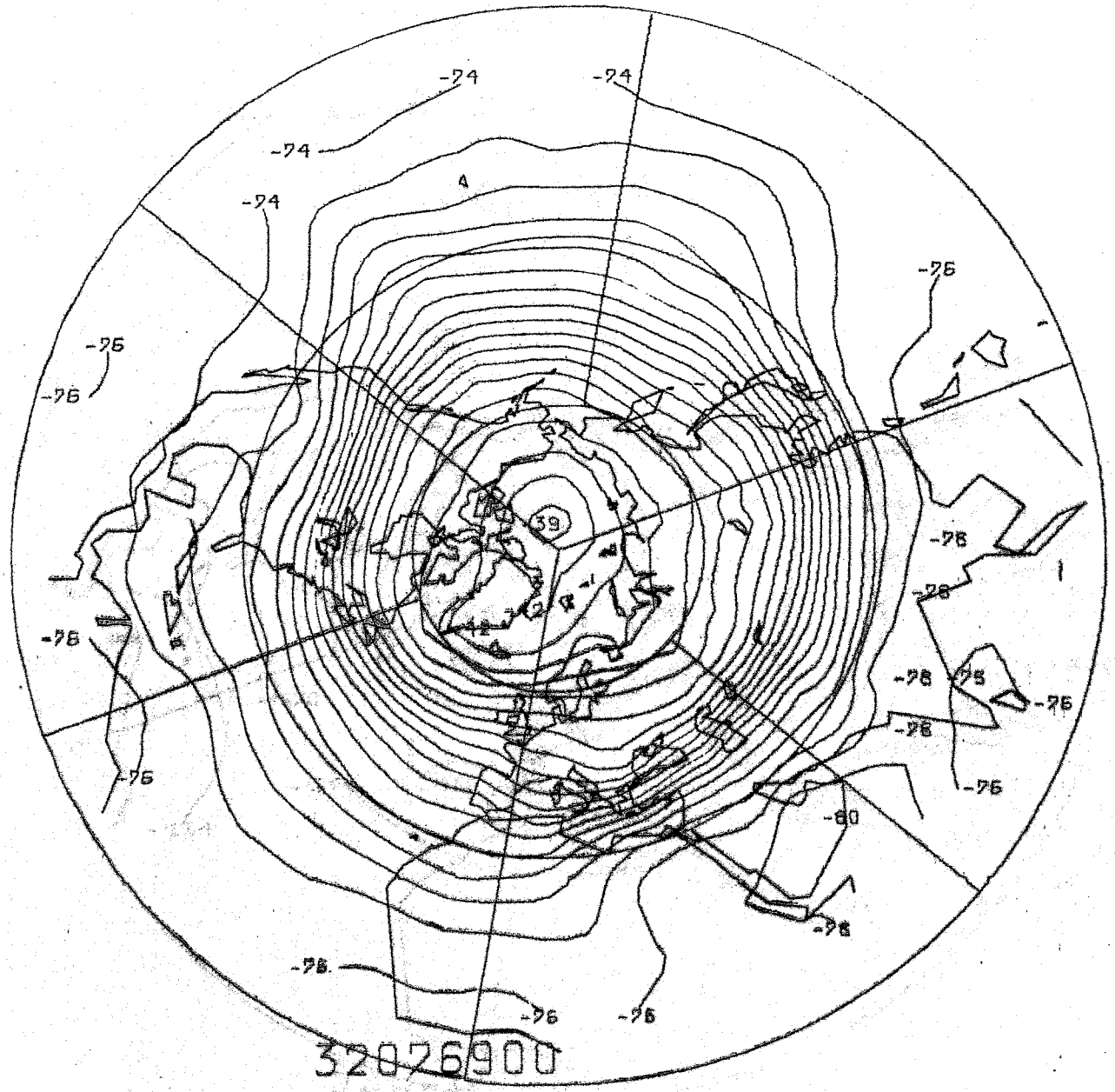


FIG. 51a

$[\phi]_{(t)}$ 100 mb JULY 1969

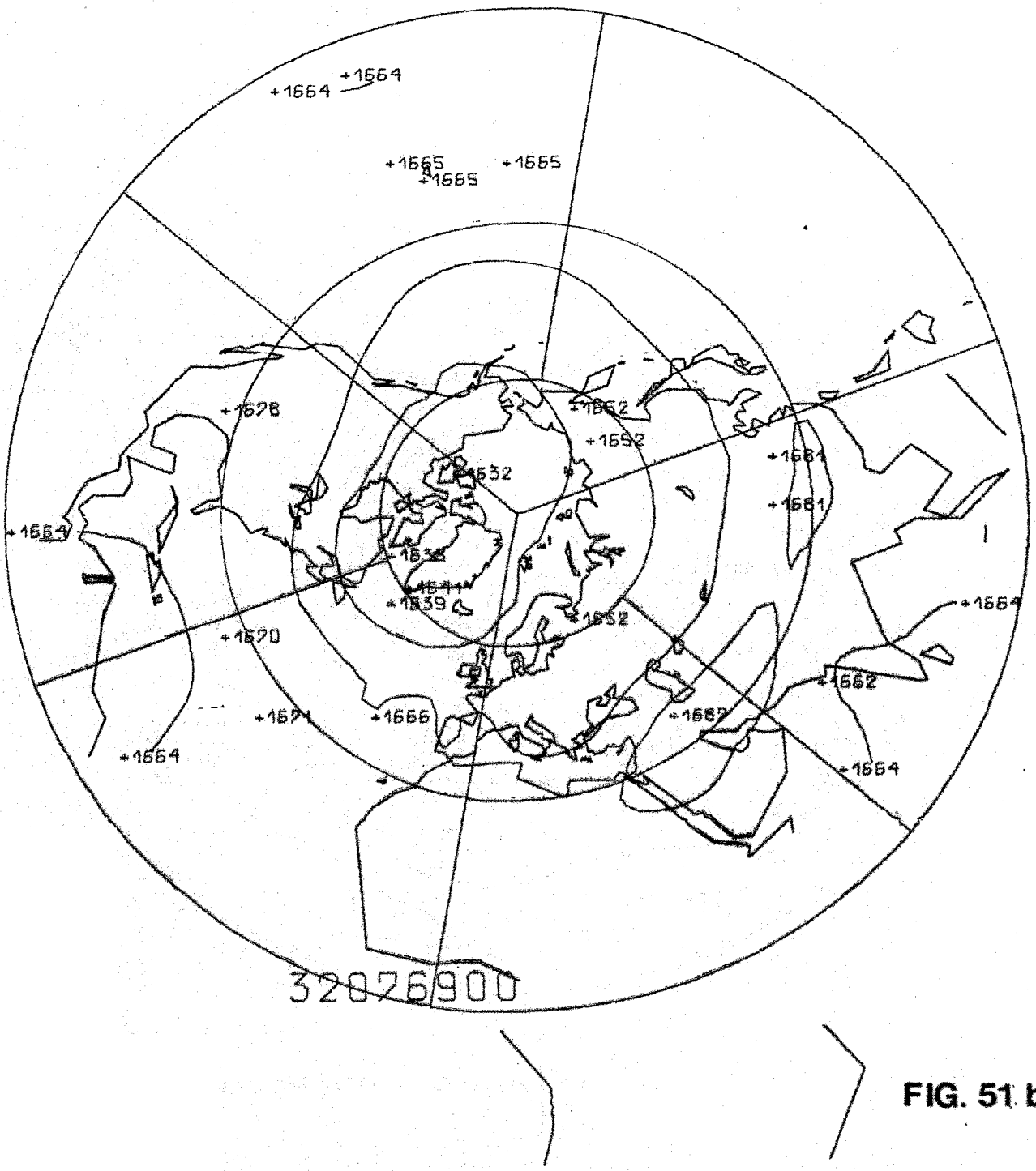


FIG. 51 b

$[T]_{(t)}$ 850mb JULY 1970

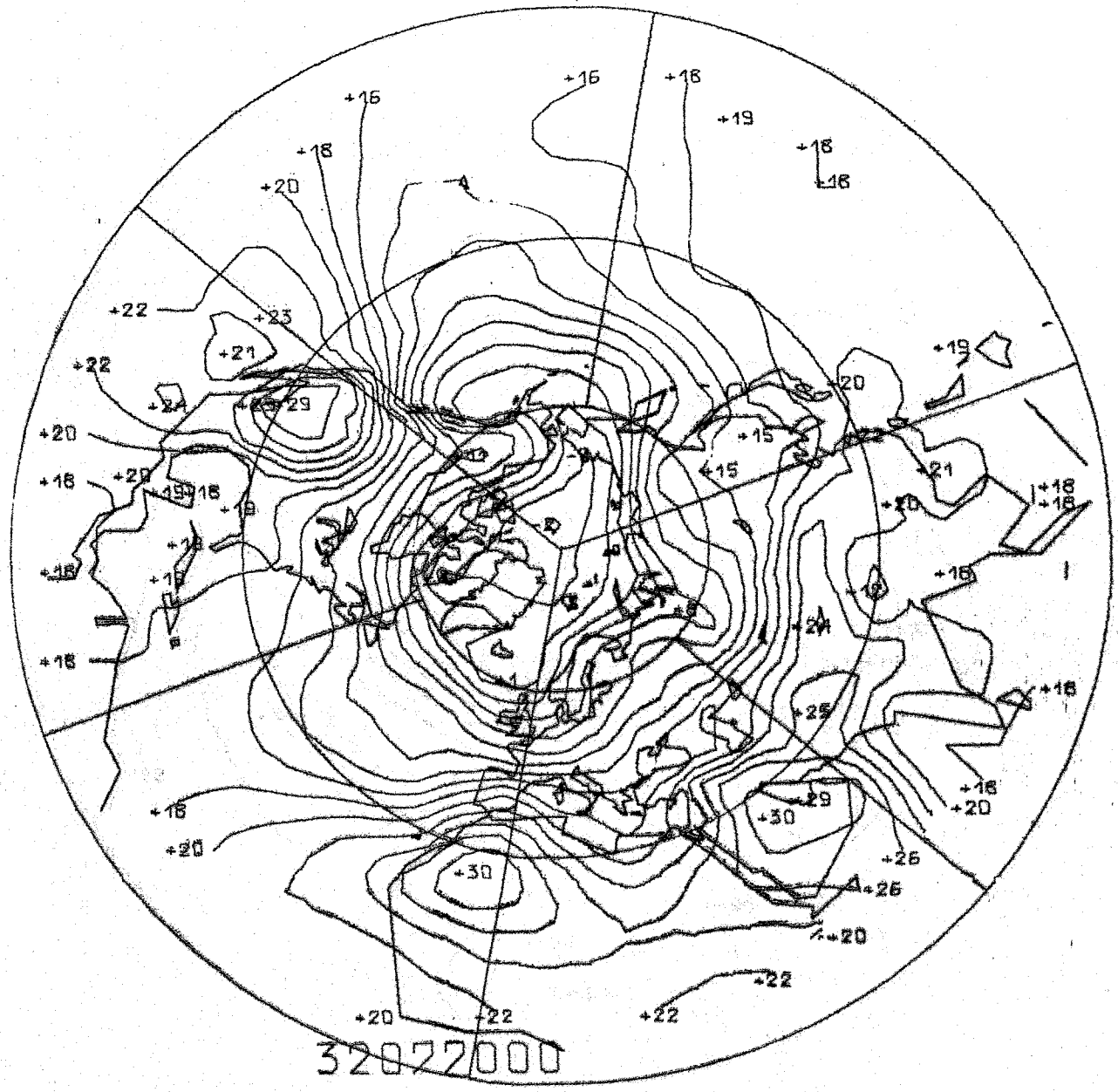


FIG. 52a

$[\phi]_{(t)}$ 850 mb JULY 1970

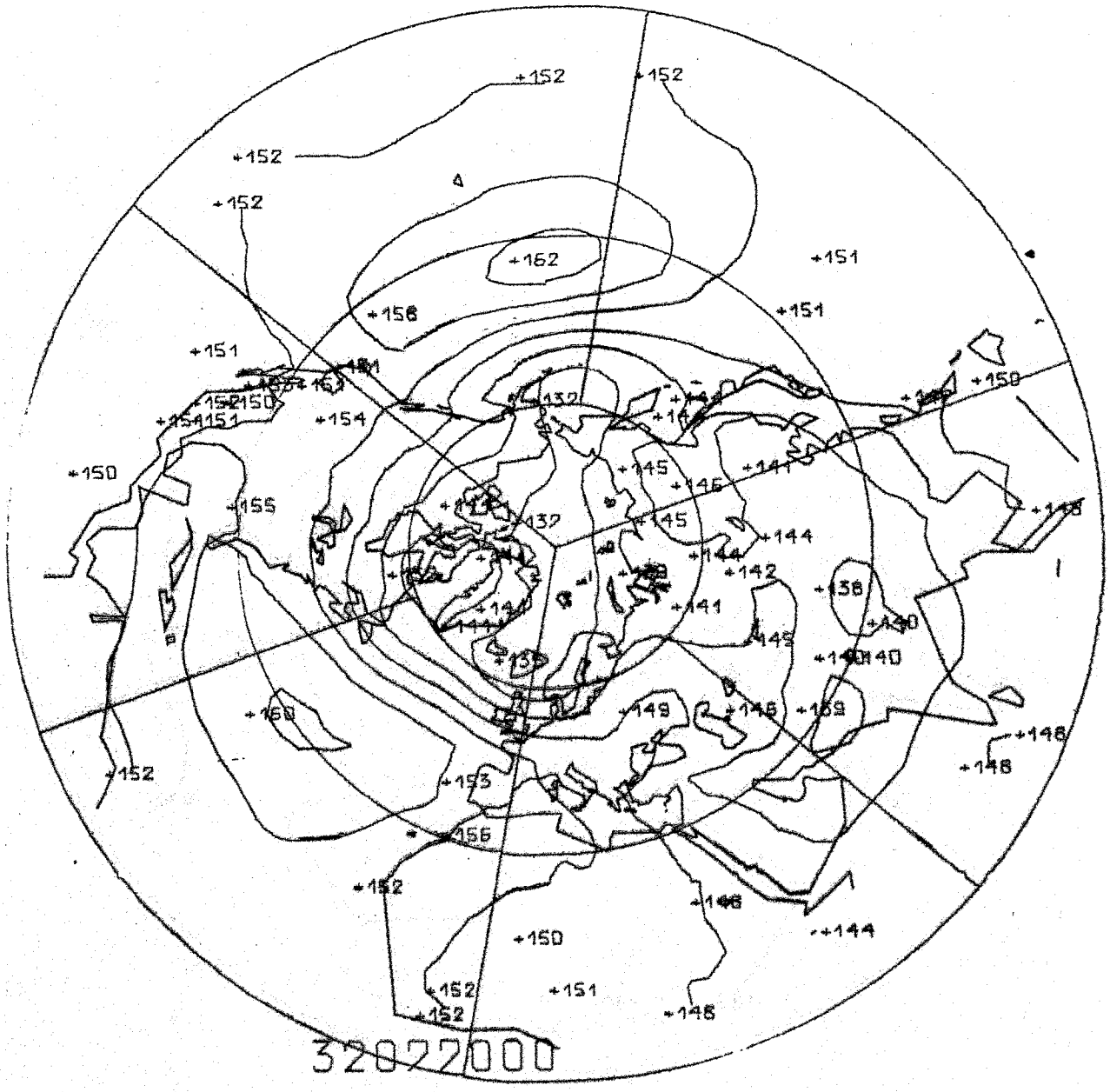


FIG. 52 b.

$[\phi]_{(t)}$ 500 mb JULY 1970

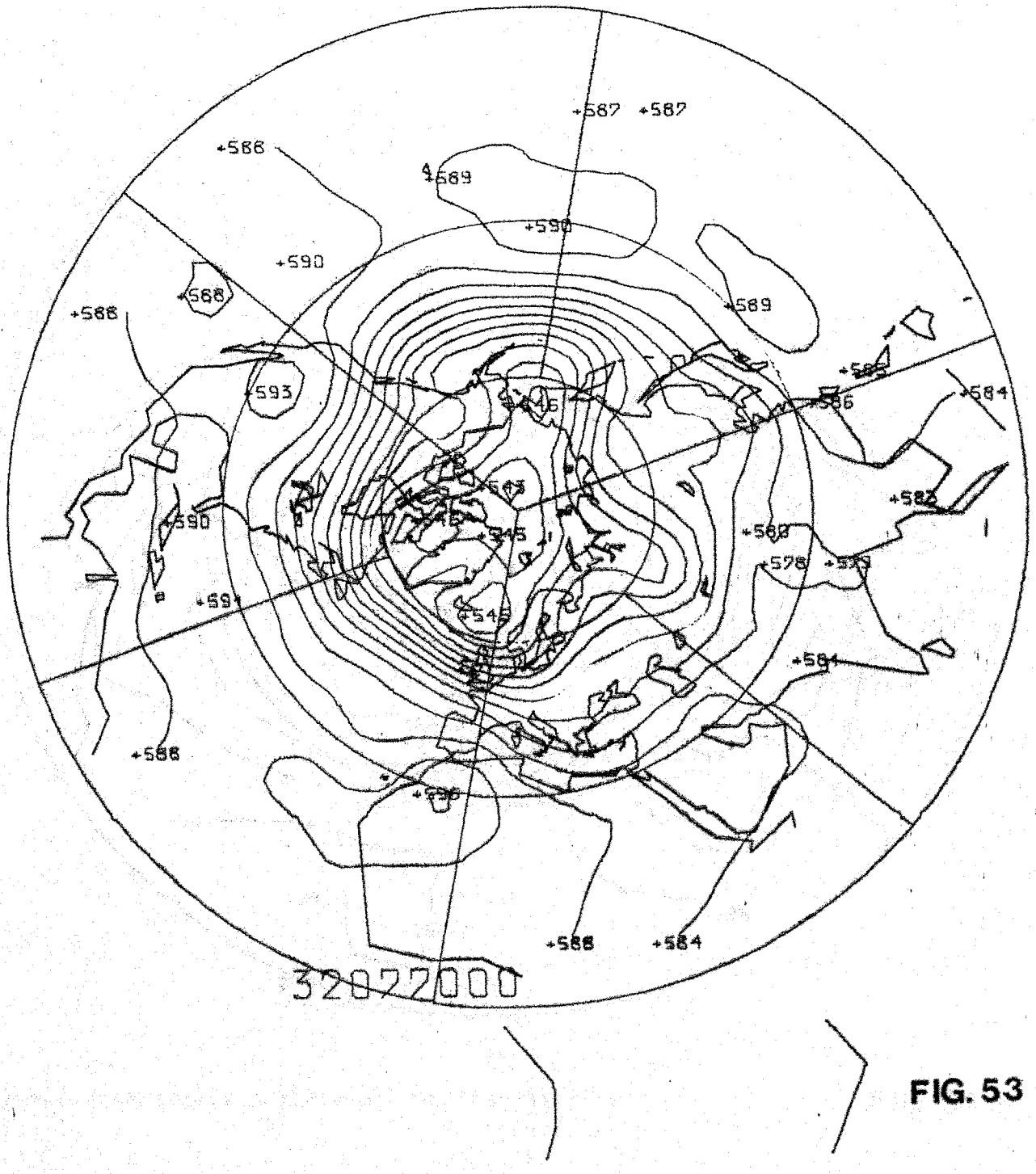


FIG. 53

$[T]_{(t)}$ 300mb JULY 1970

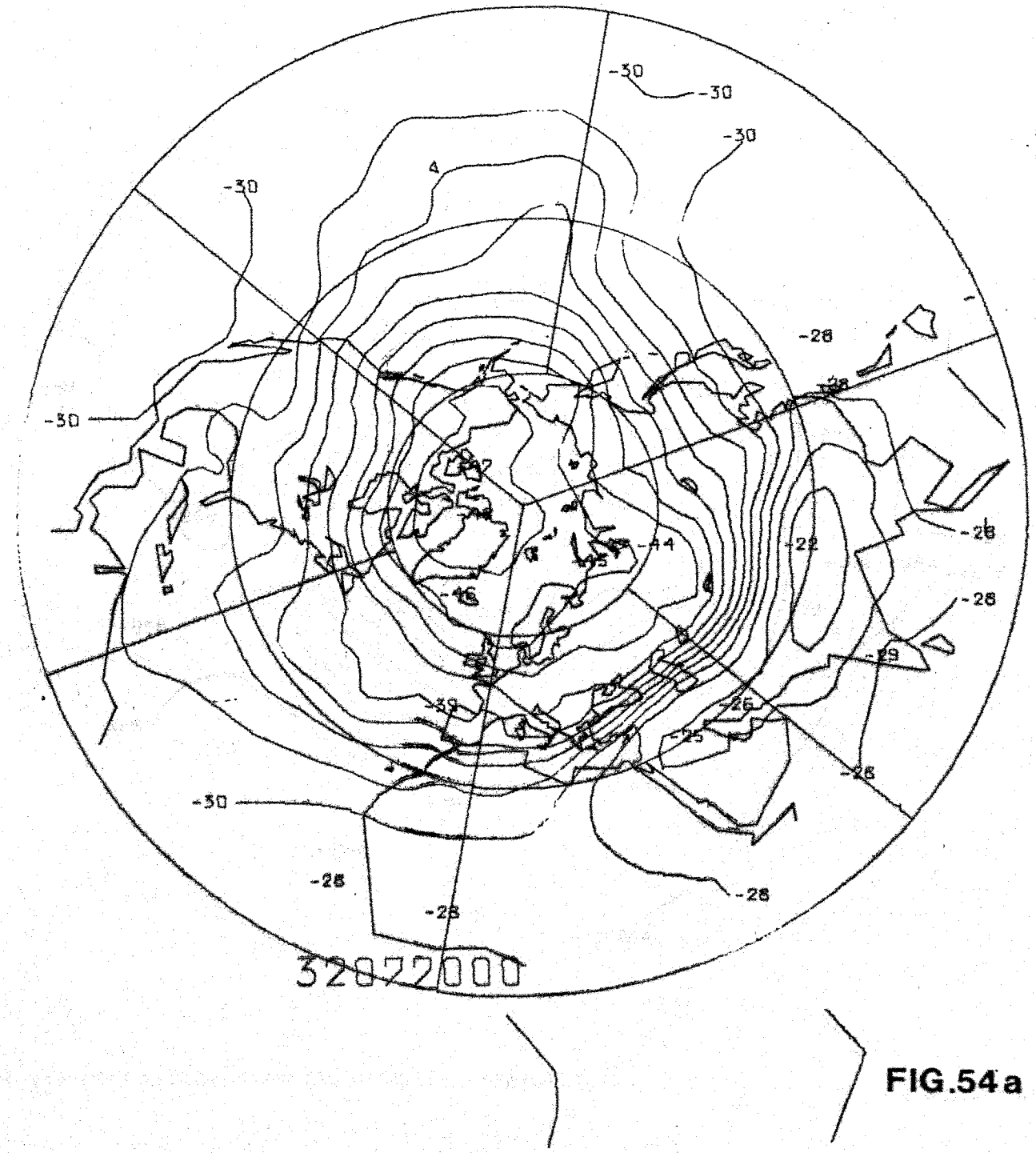


FIG.54a

$[\phi]_{(t)}$ 300 mb JULY 1970

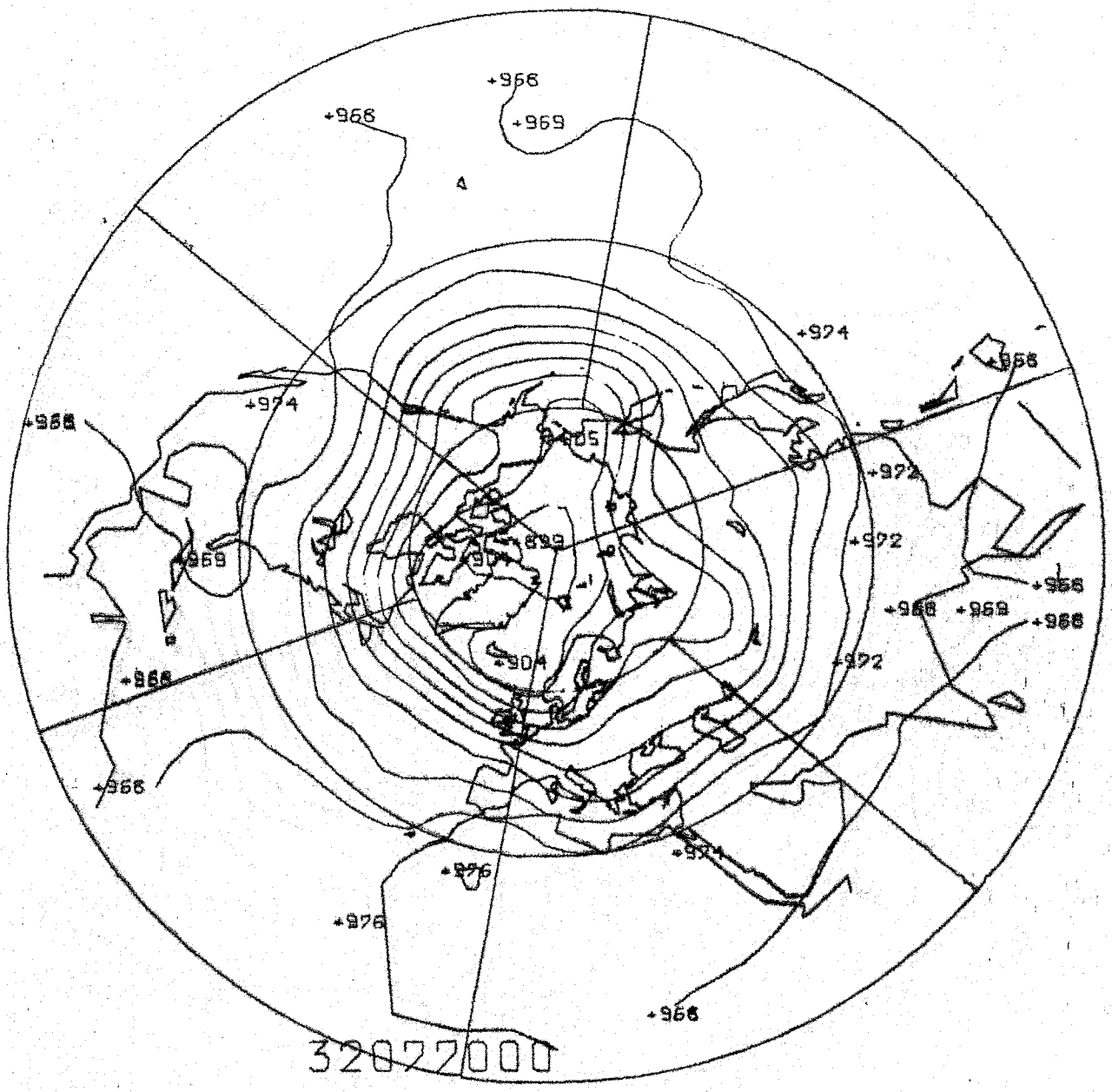
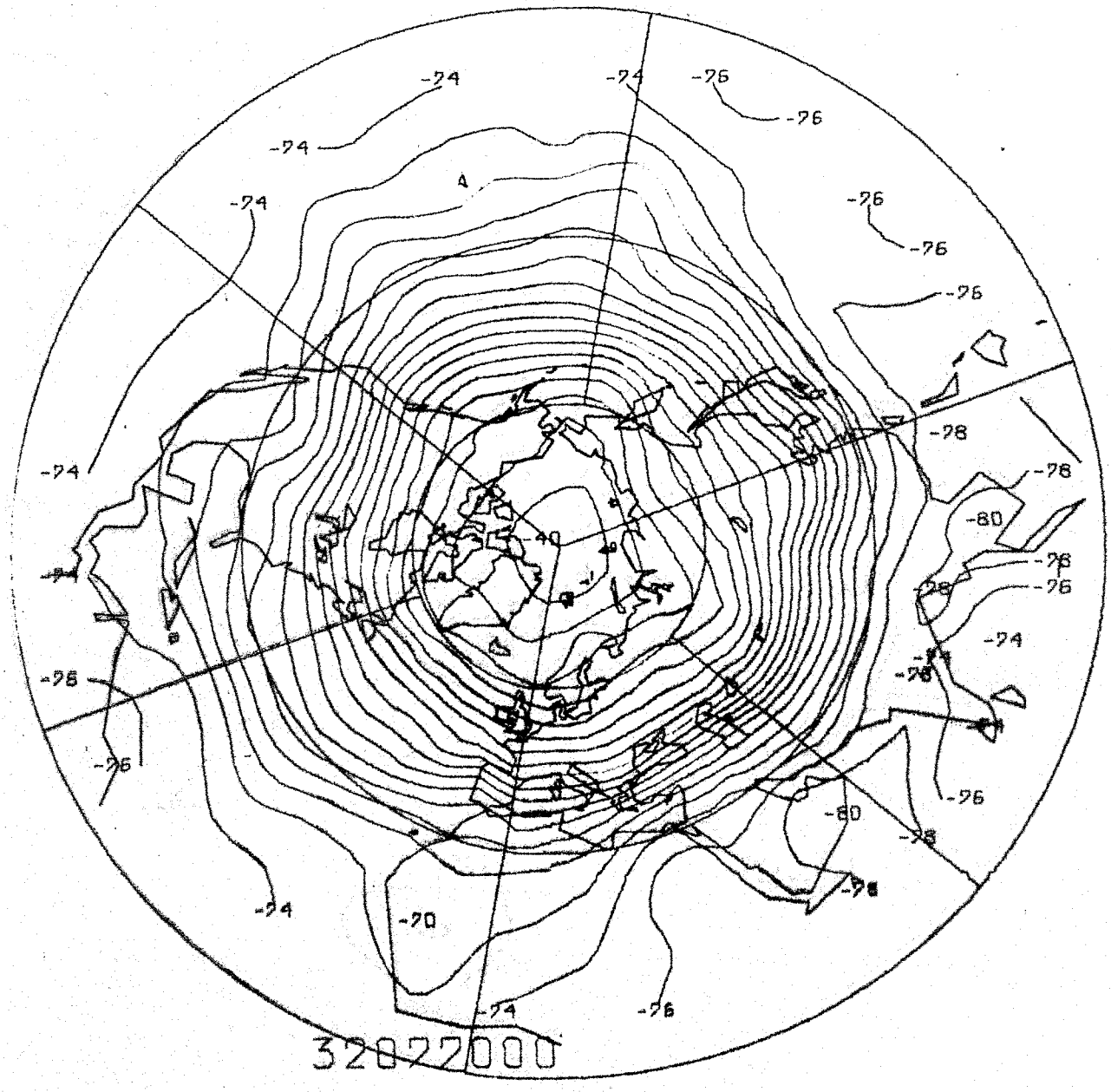


FIG.54b

$[T]_{(t)}$ 100mb JULY 1970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$[\phi]_{(t)}$ 100mb JULY 1970

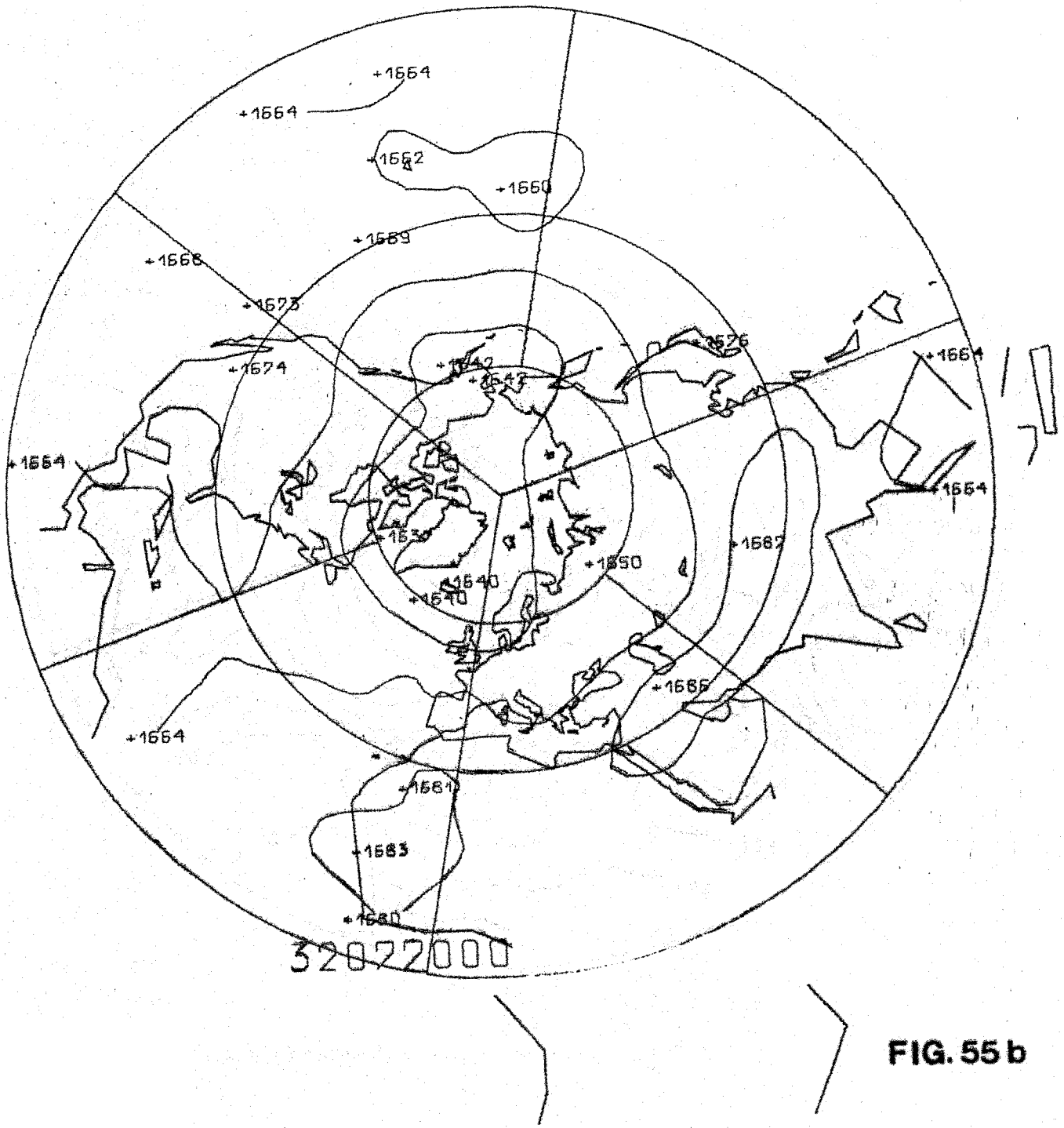
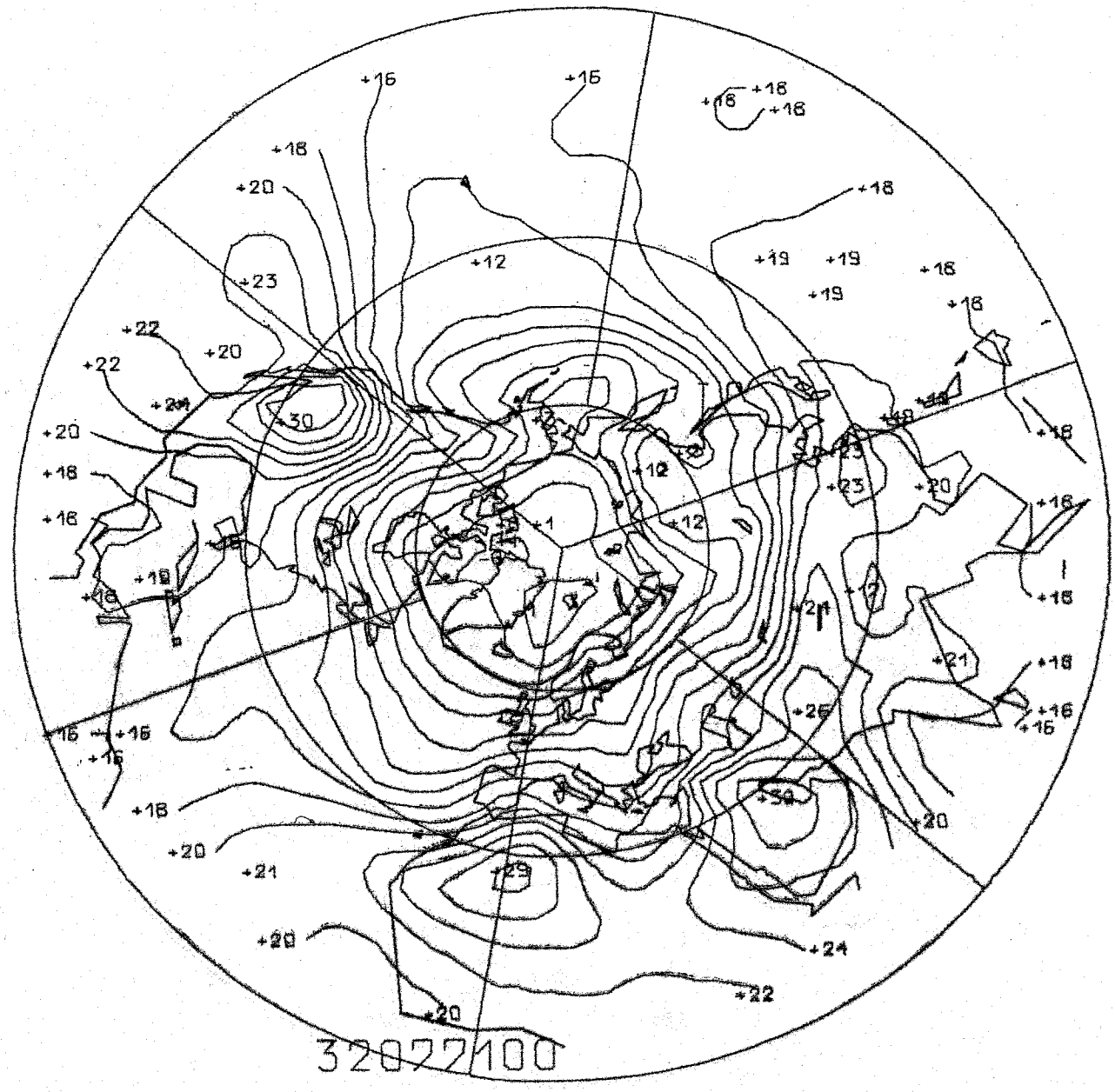


FIG. 55 b

$[T]_{(t)}$ 850 mb JULY 1971



32022100

FIG.56a

$[\phi]_{(t)}$ 850 mb JULY 1971

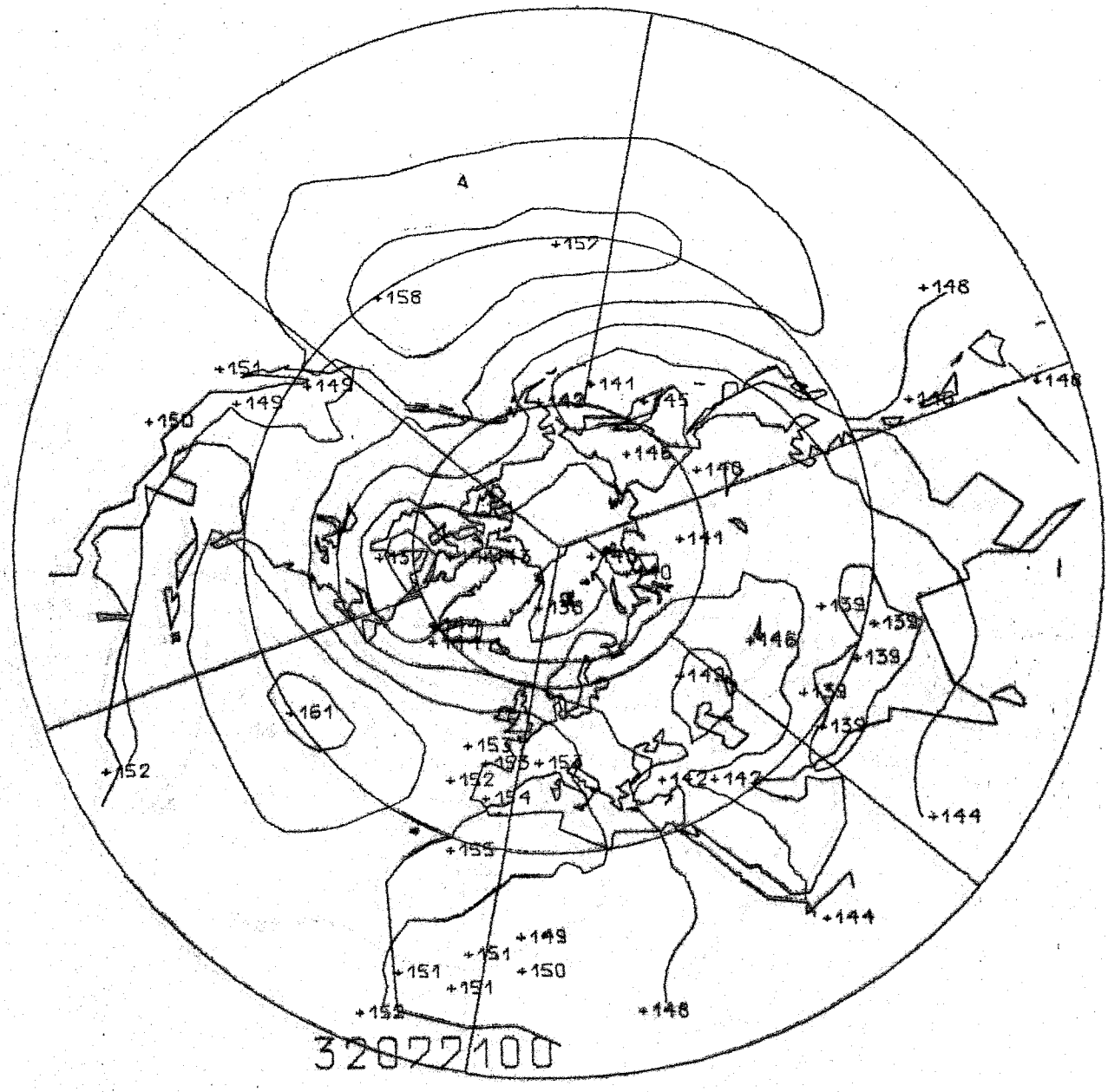


FIG. 56b

$[\phi]_{(t)}$ 500mb JULY 1971

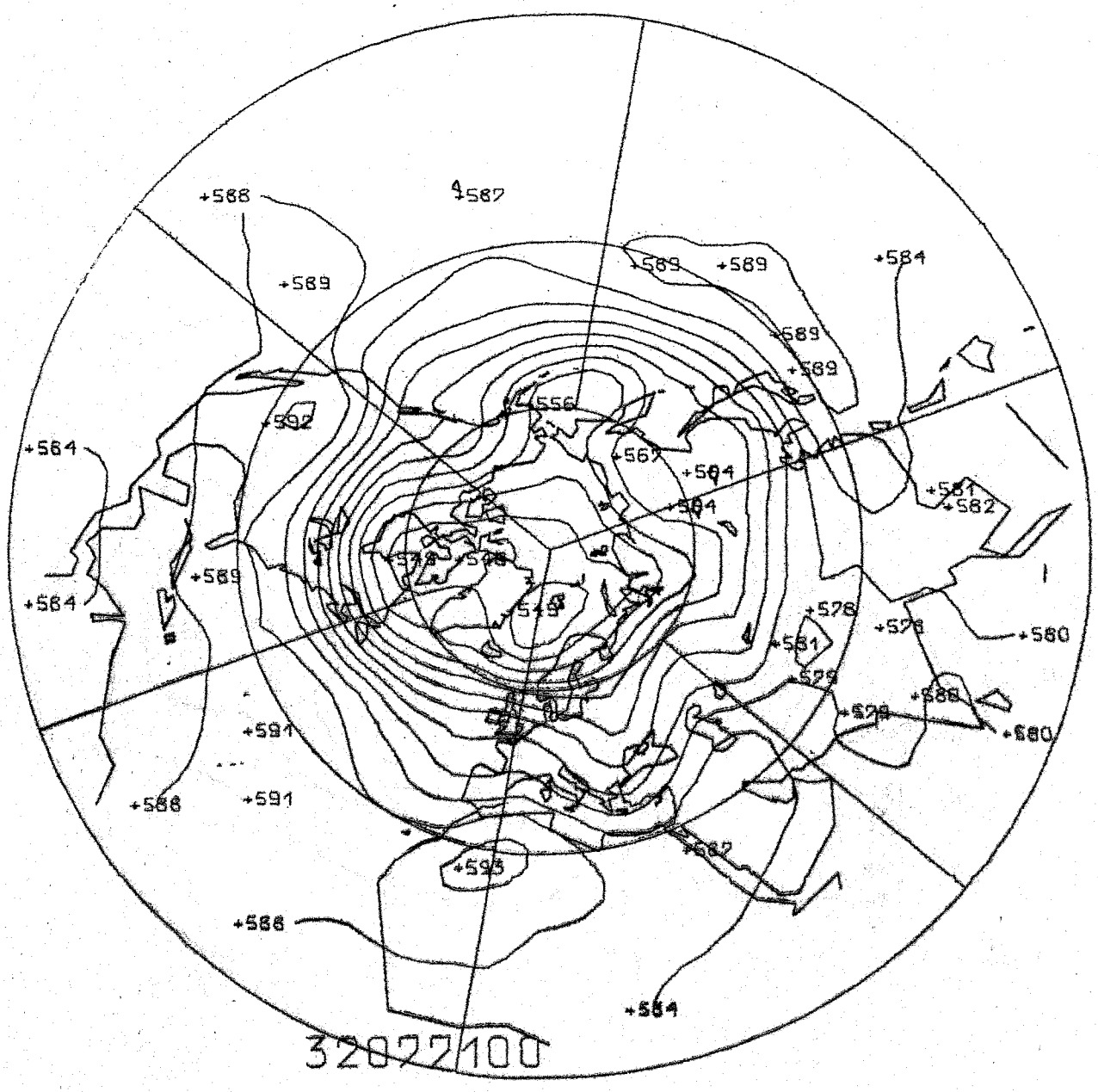


FIG. 57

$[T]_{(t)}$ 300 mb JULY 1971

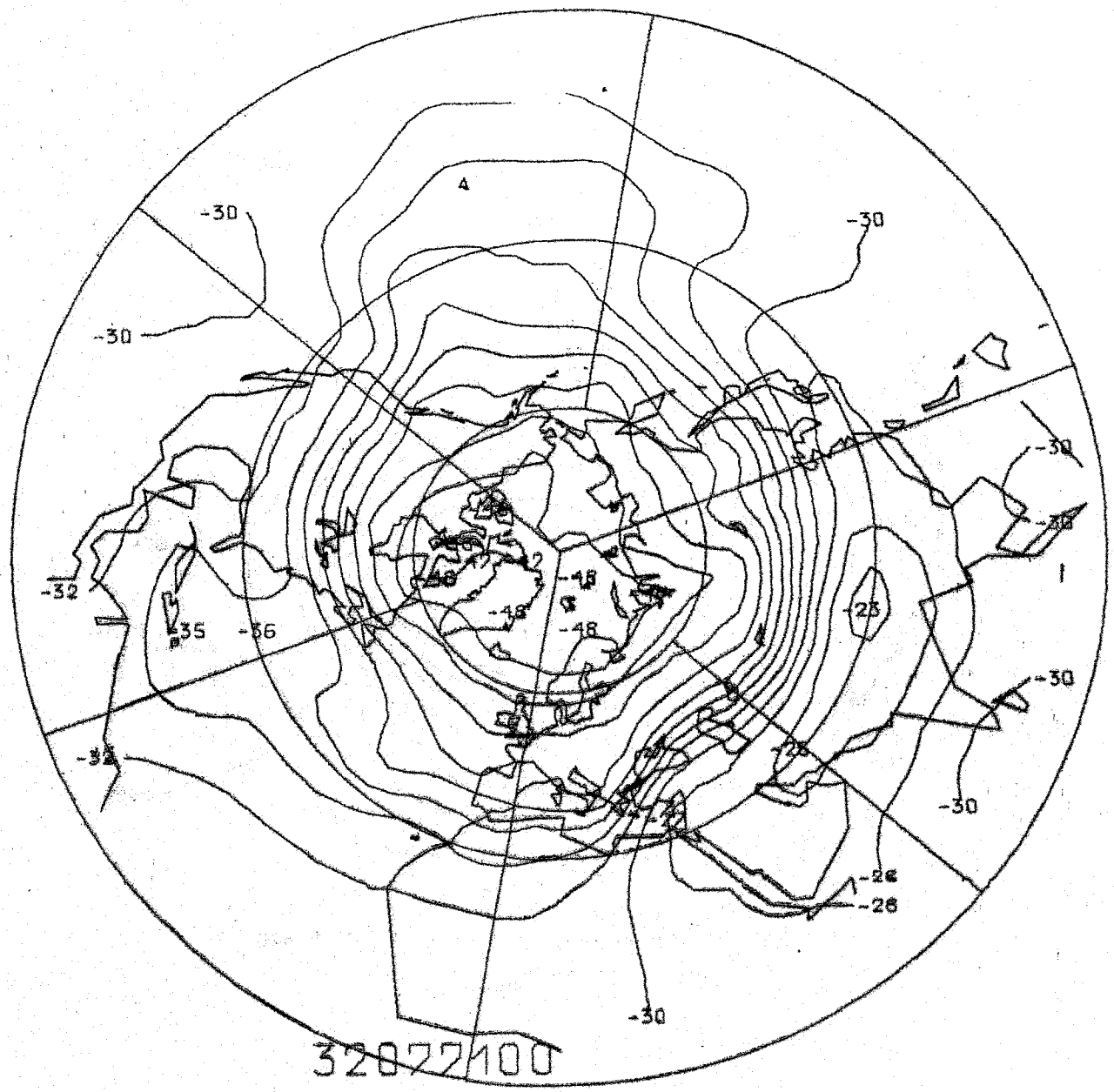


FIG. 58 a

$[\phi]_{(t)}$ 300 mb JULY 1971

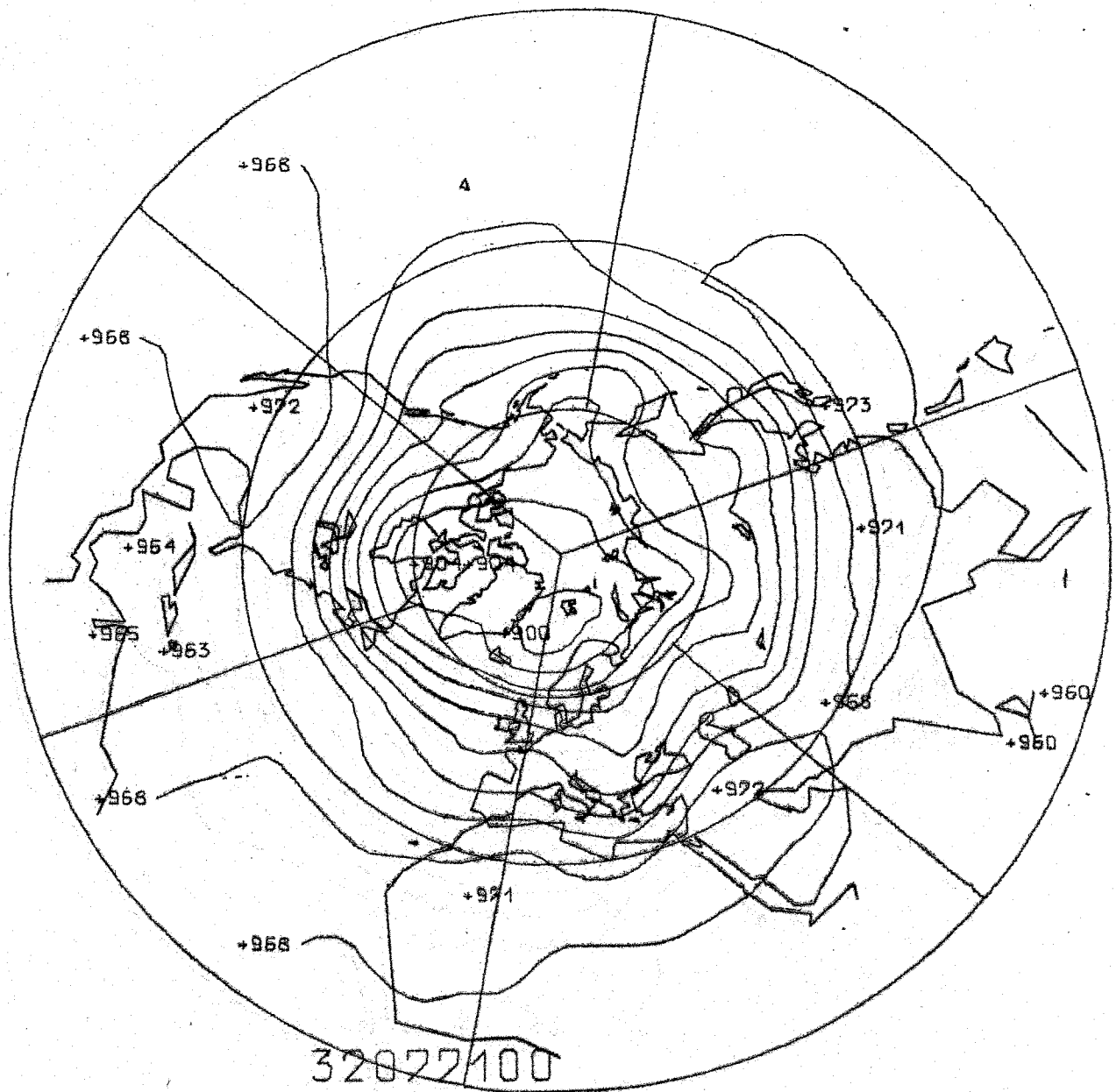
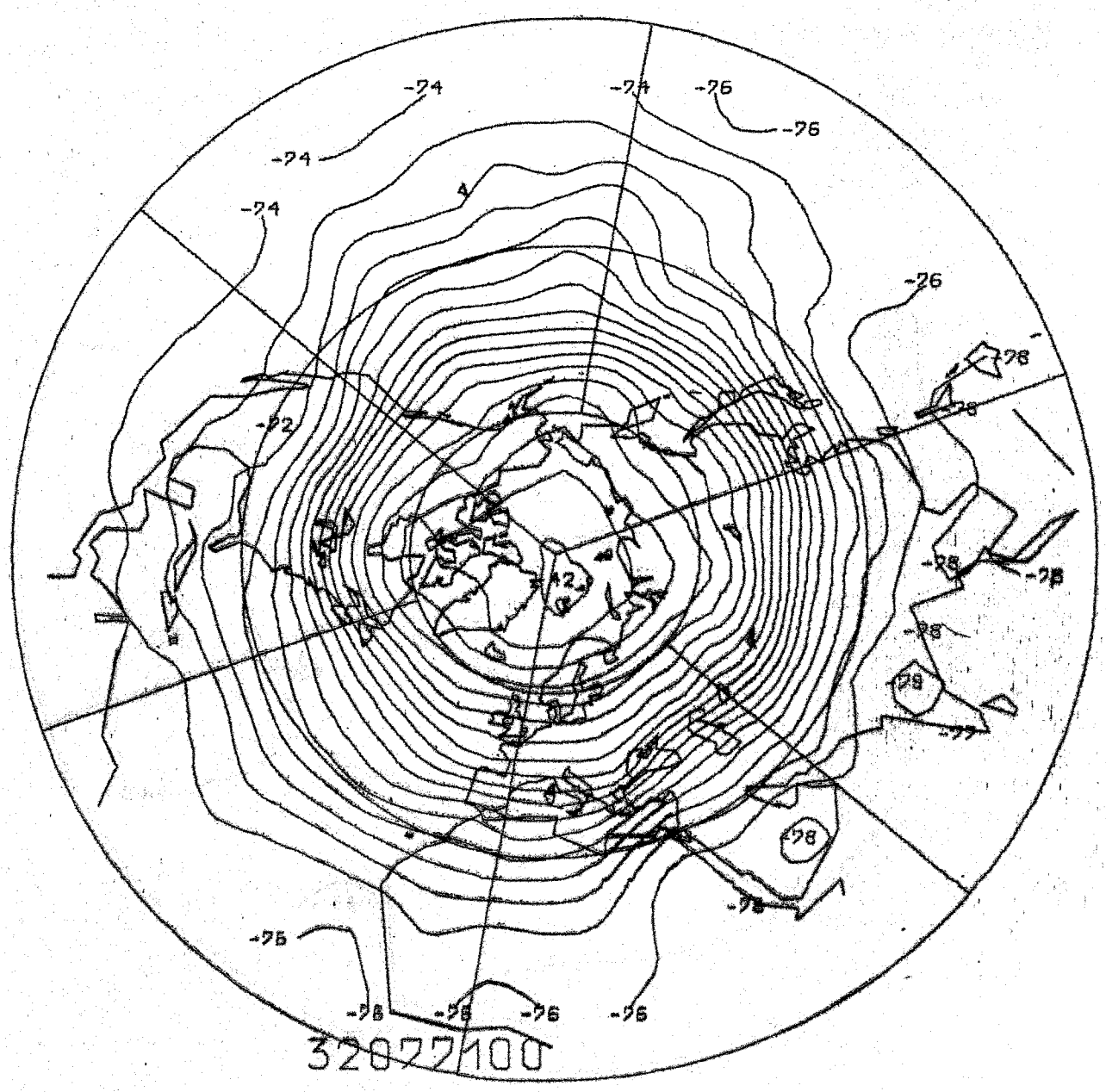


FIG. 58 b

$[T]_{(t)}$ 100 mb JULY 1971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$[\phi]_{(t)}$ 100mb JULY 1971

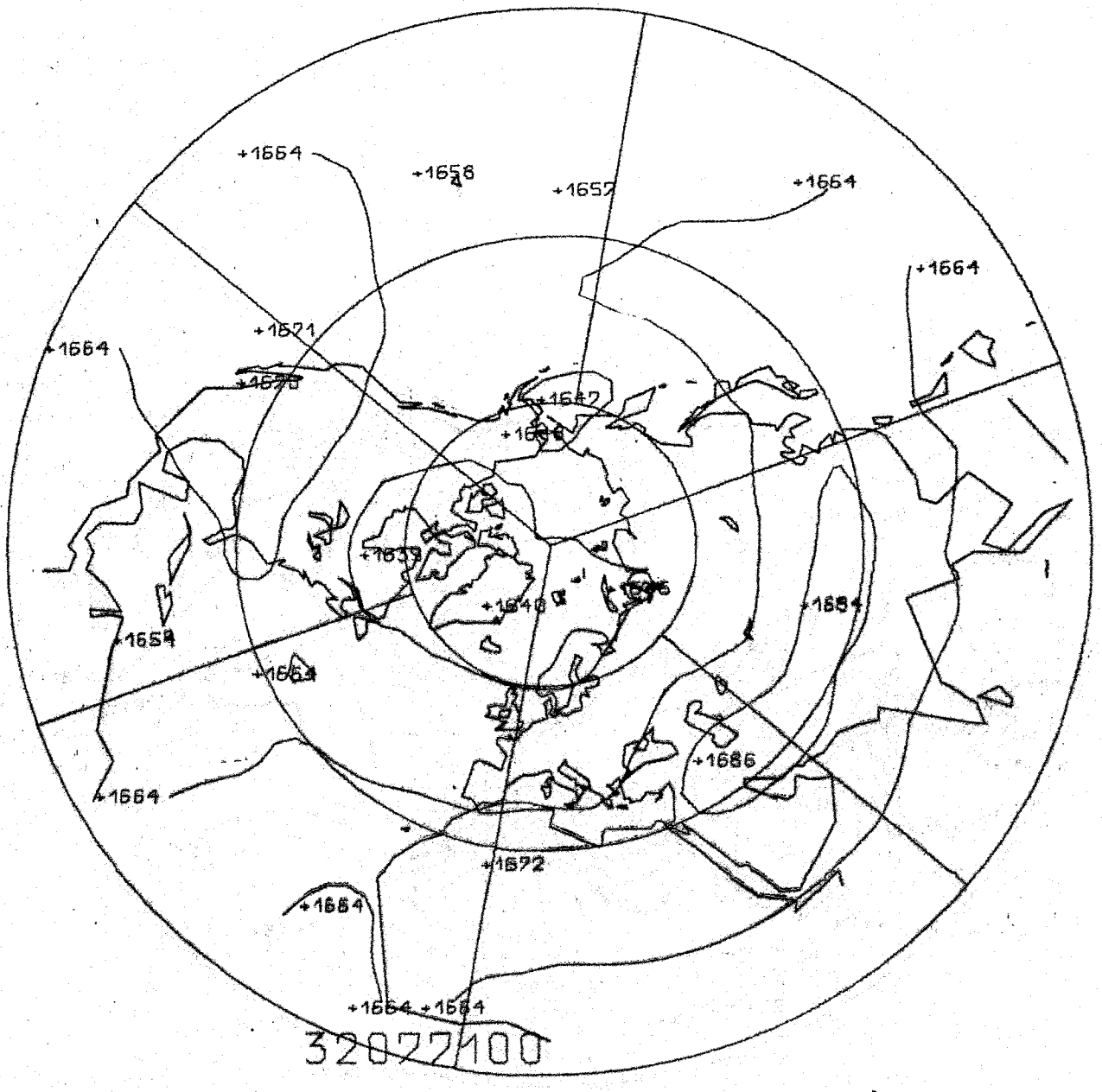


FIG. 59b

$[T]_{(t)}$ 850 mb JULY 1972

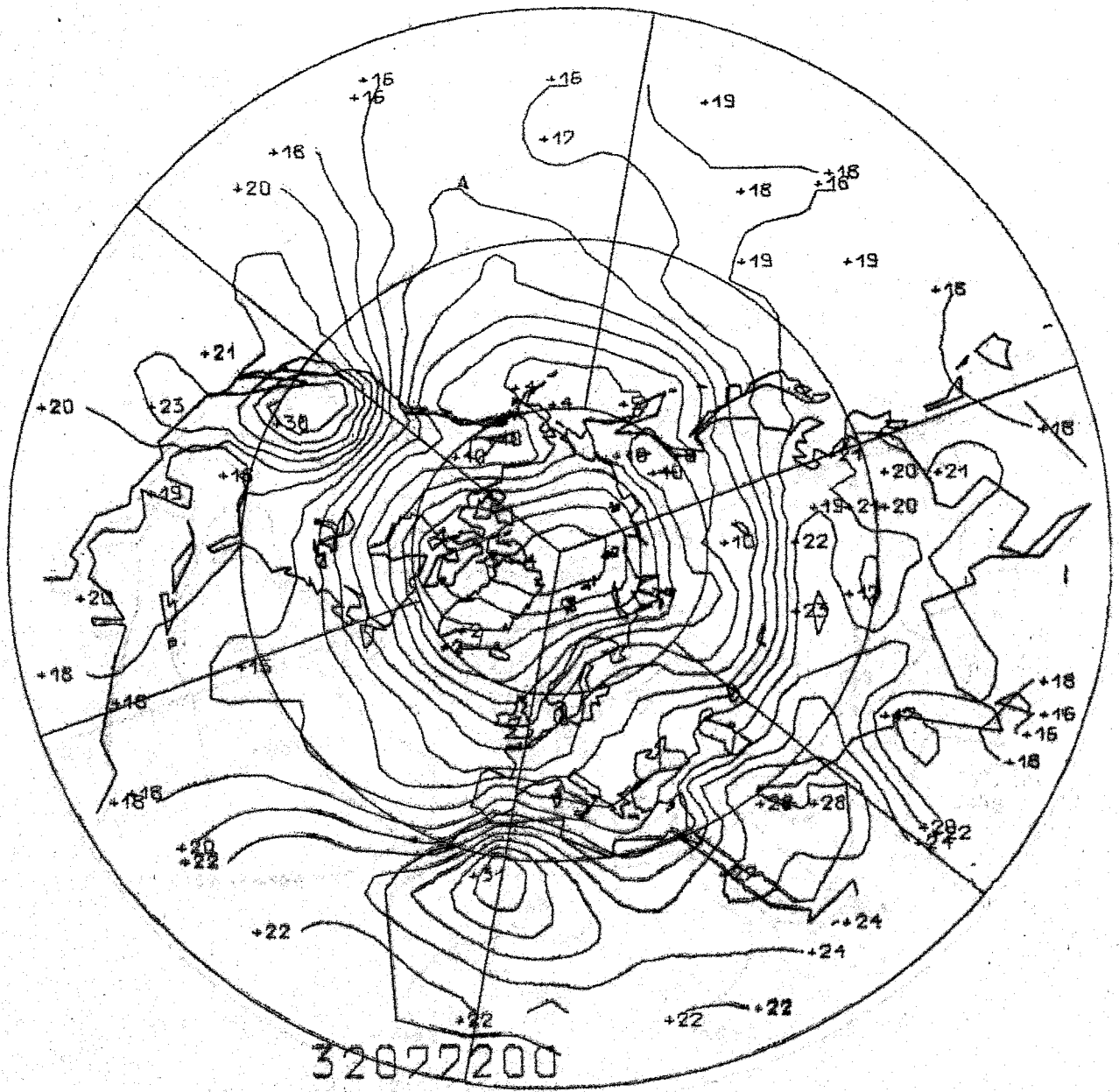


FIG.6Oa

$[\phi]_{(t)}$ 850 mb JULY 1972

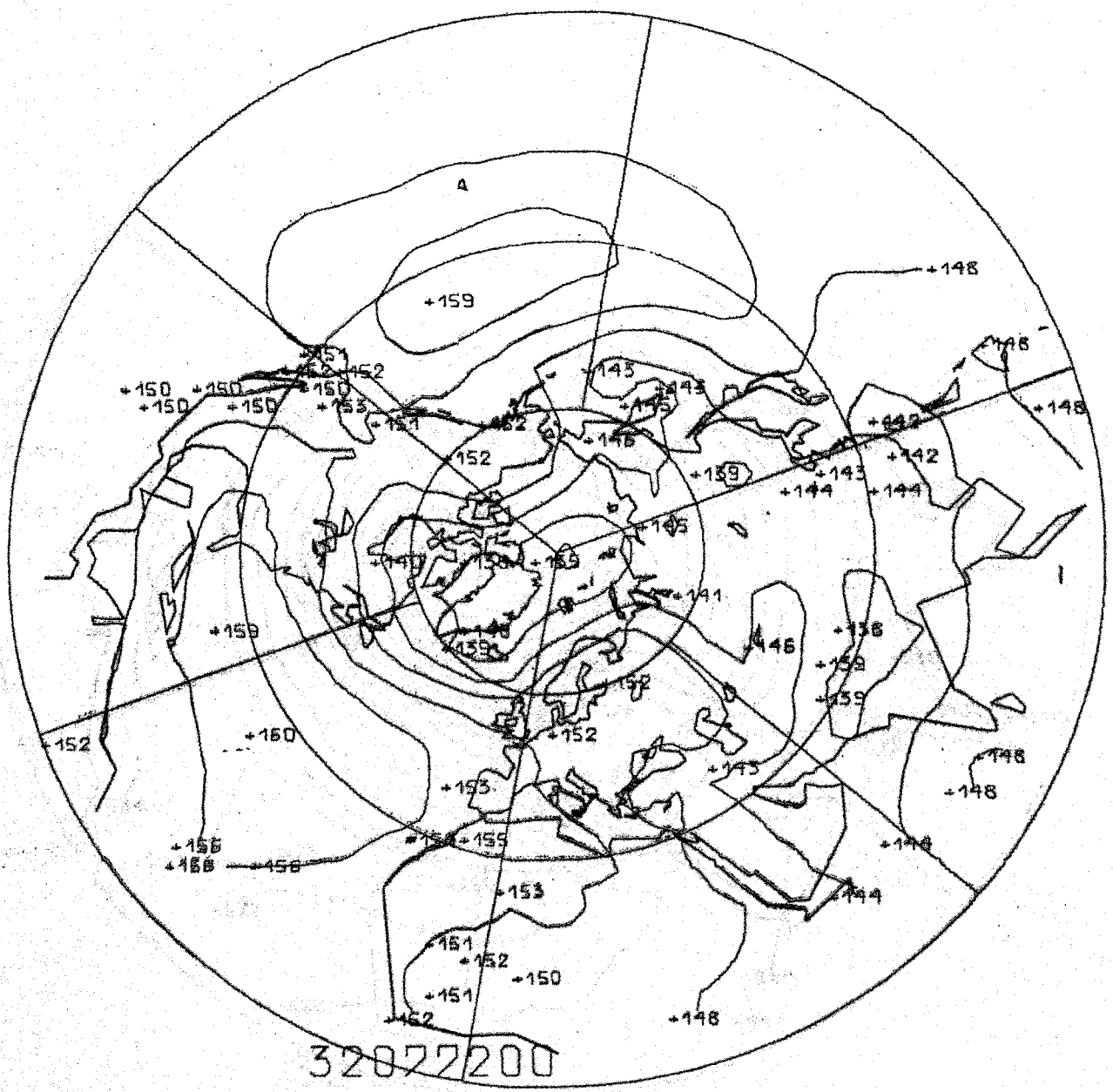


FIG. 60 b

$[\phi]_{(t)}$ 500mb JULY 1972

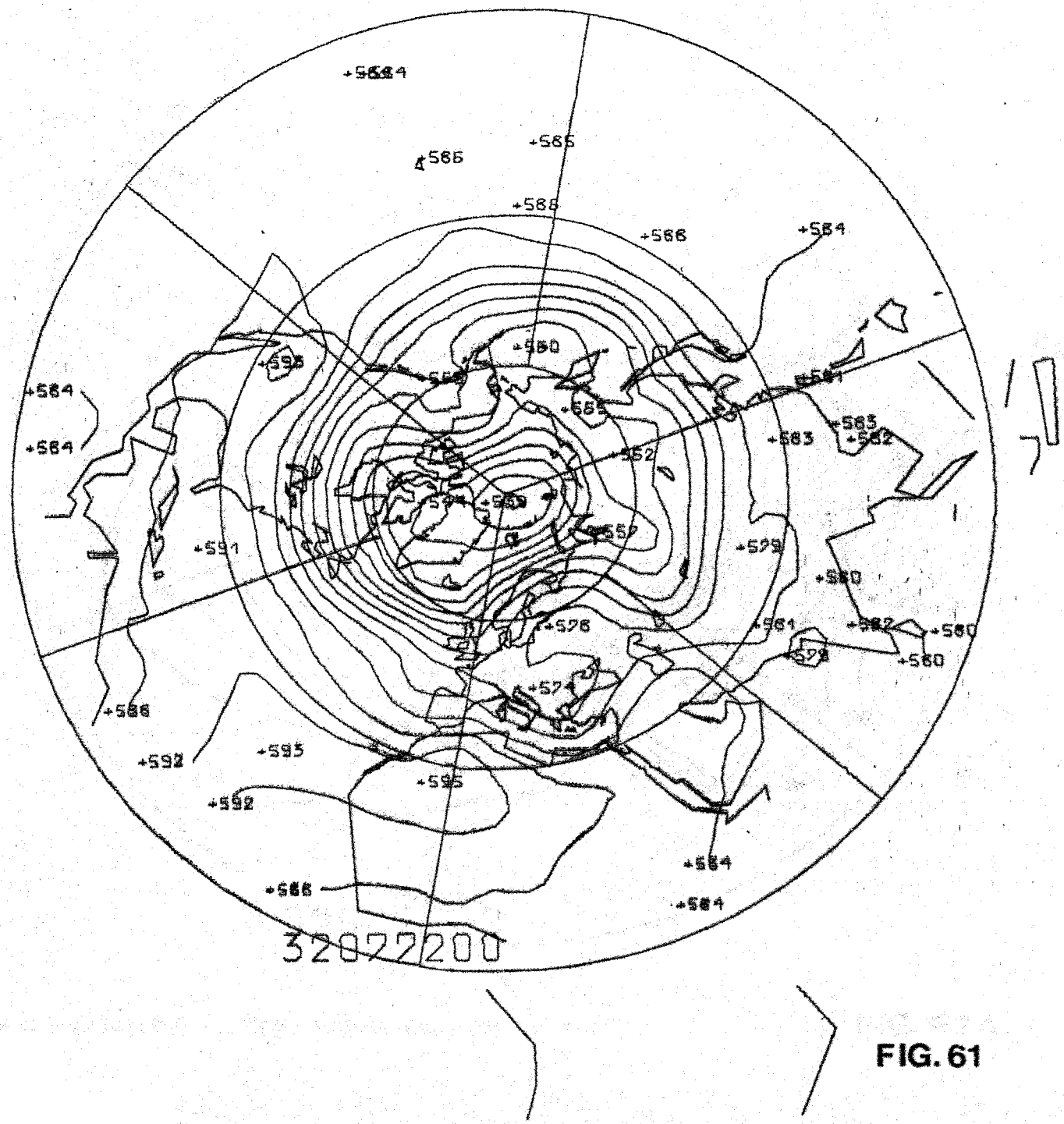


FIG. 61

$[T]_{(t)}$ 300mb JULY 1972

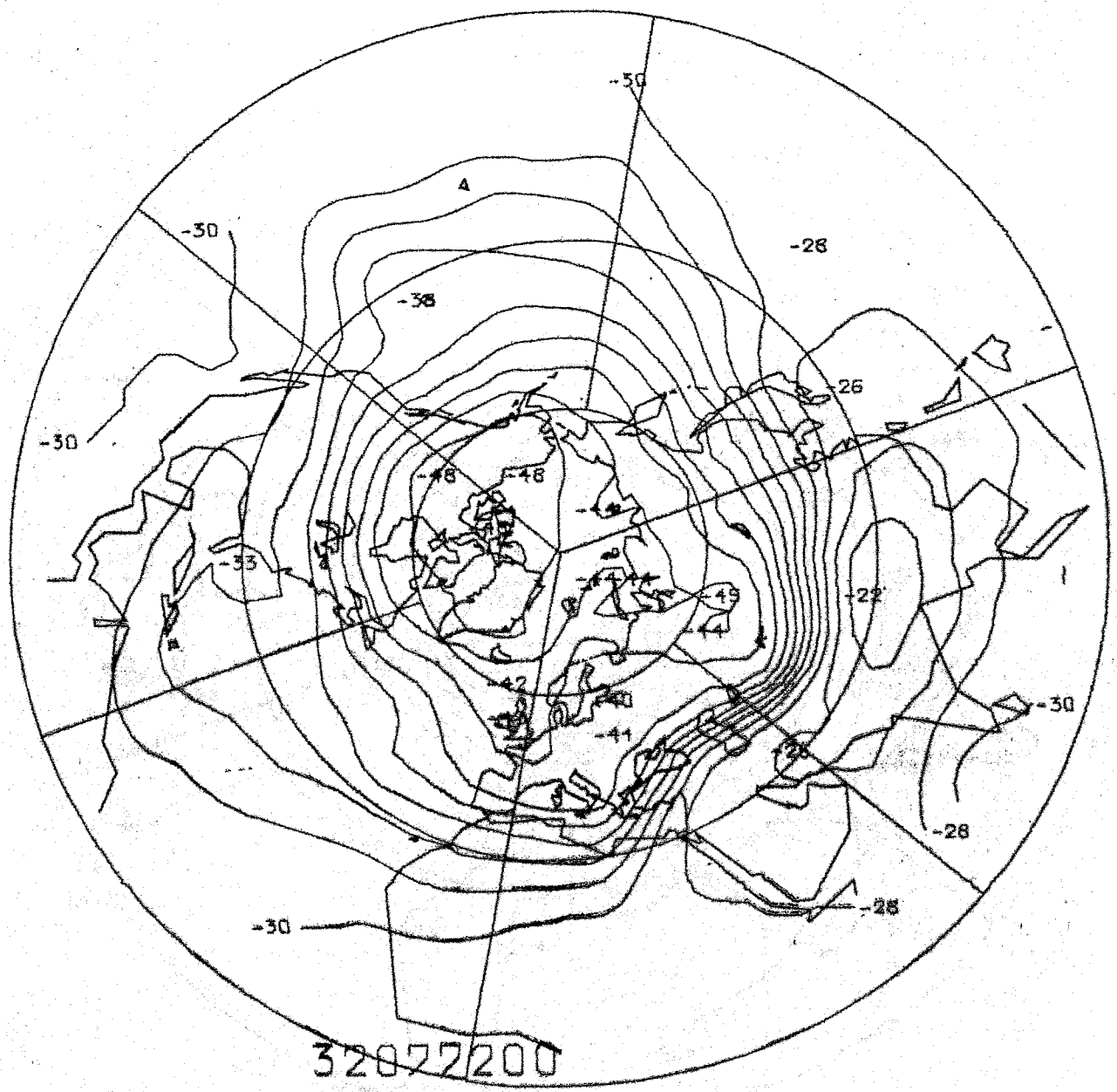


FIG. 62 a

$[\phi]_{(t)}$ 300 mb JULY 1972

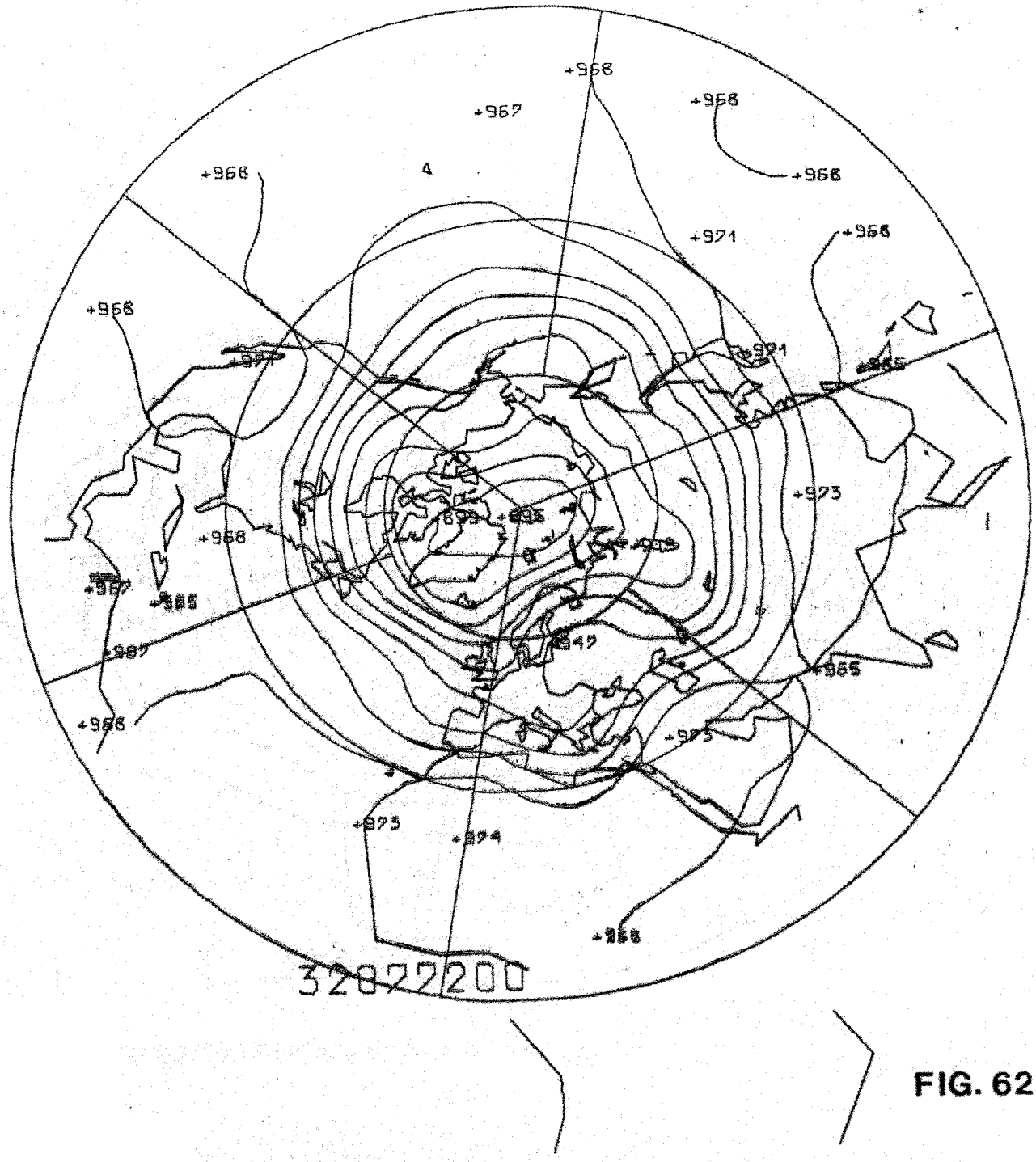


FIG. 62 b

$[T]_{(t)}$ 100mb JULY 1972

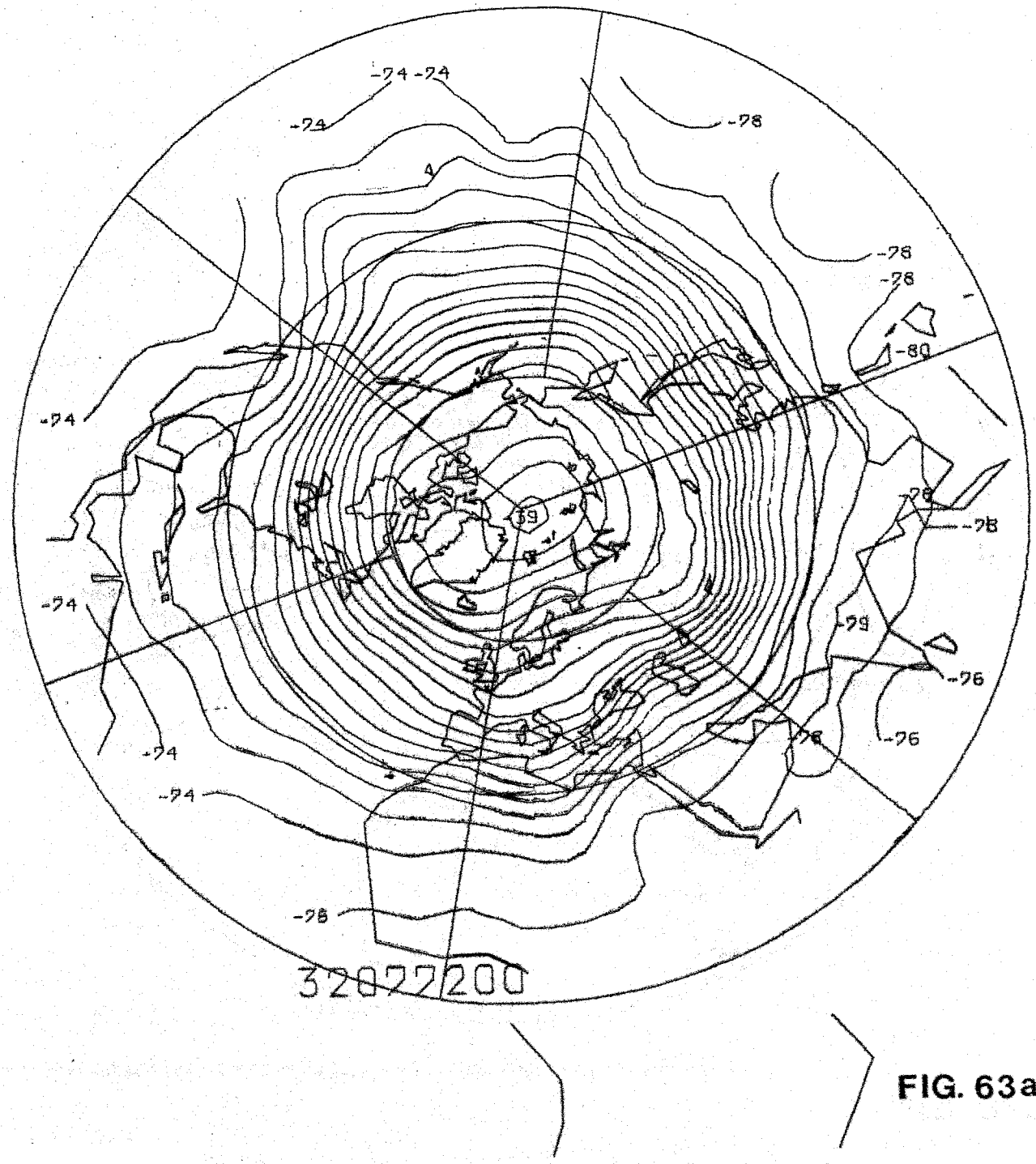
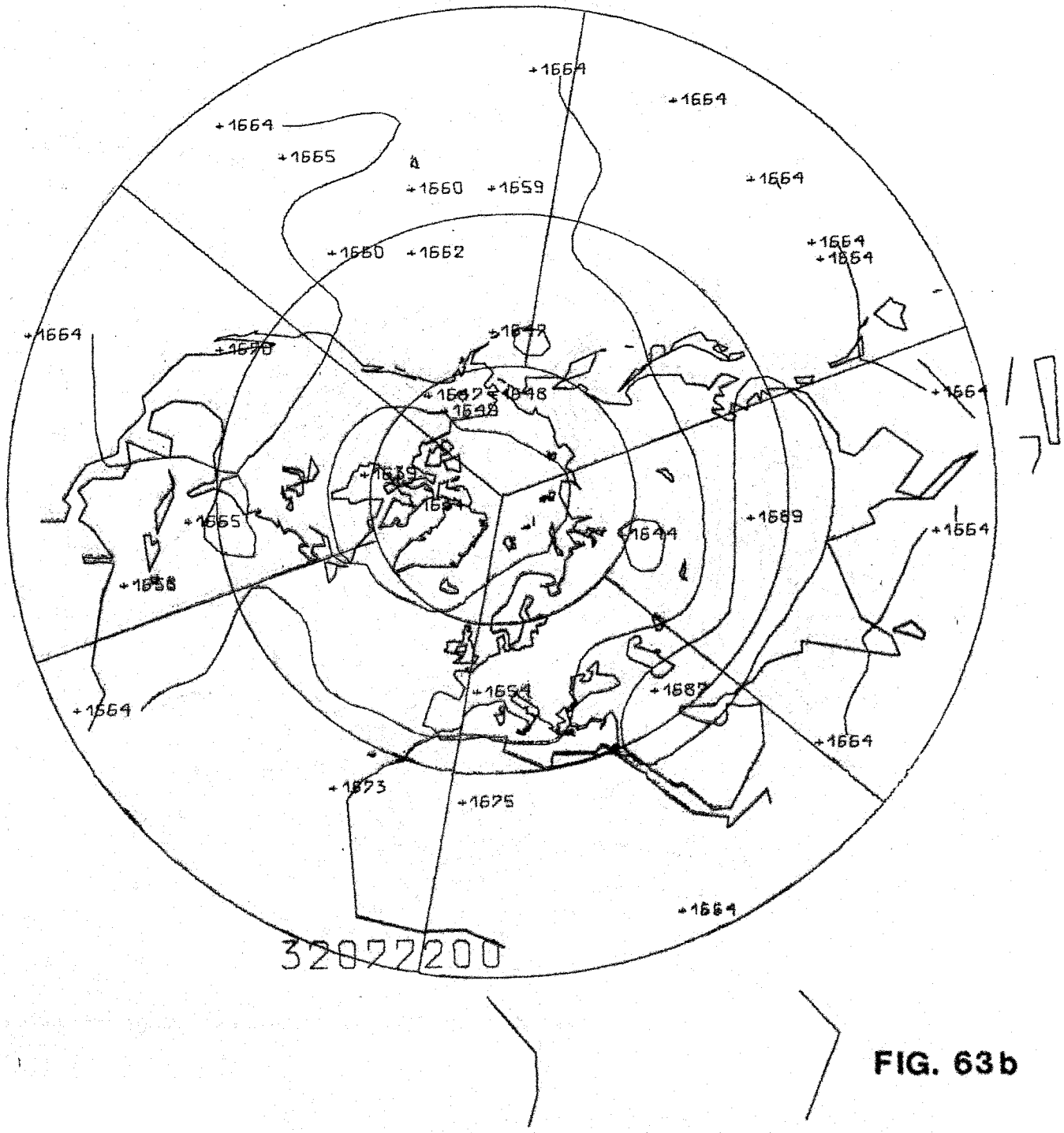


FIG. 63a

$[\phi]_{(t)}$ 100mb JULY 1972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$[T]_{(t)}$ 850mb JULY 1973

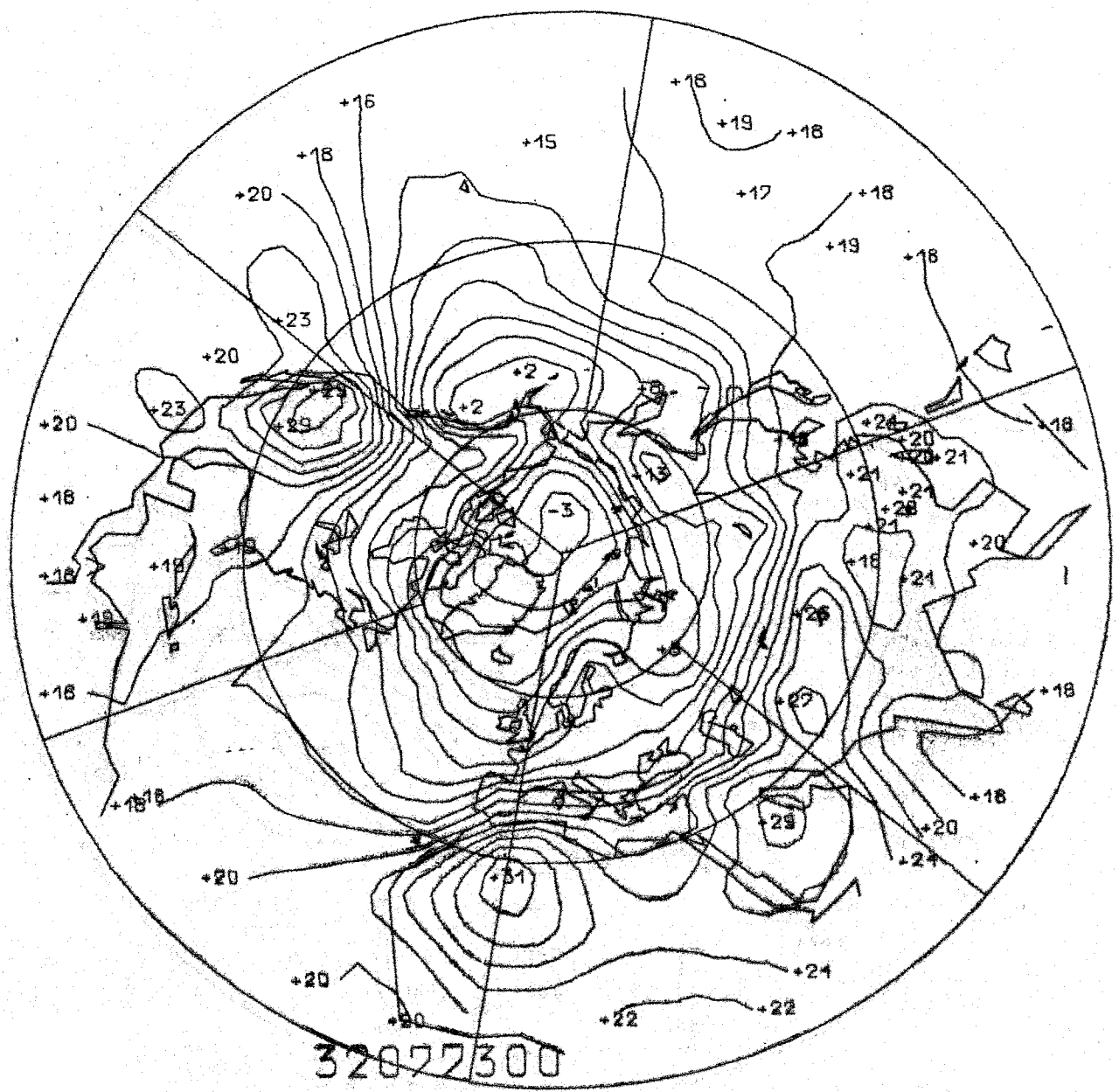


FIG.64a

$[\Phi]_{(t)}$ 850 mb JULY 1973

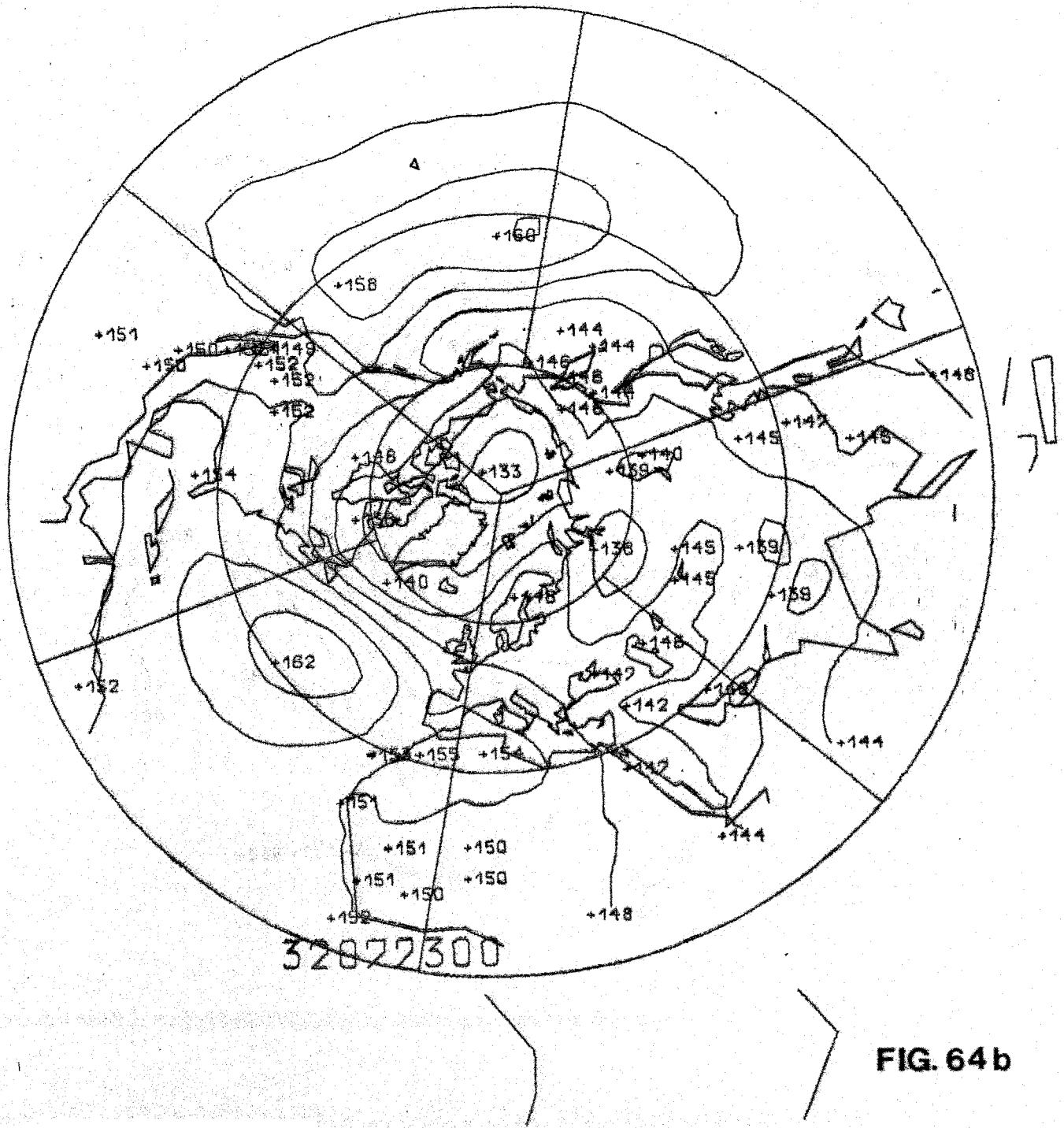


FIG. 64b

$[\Phi]_{(t)}$ 500mb JULY 1973

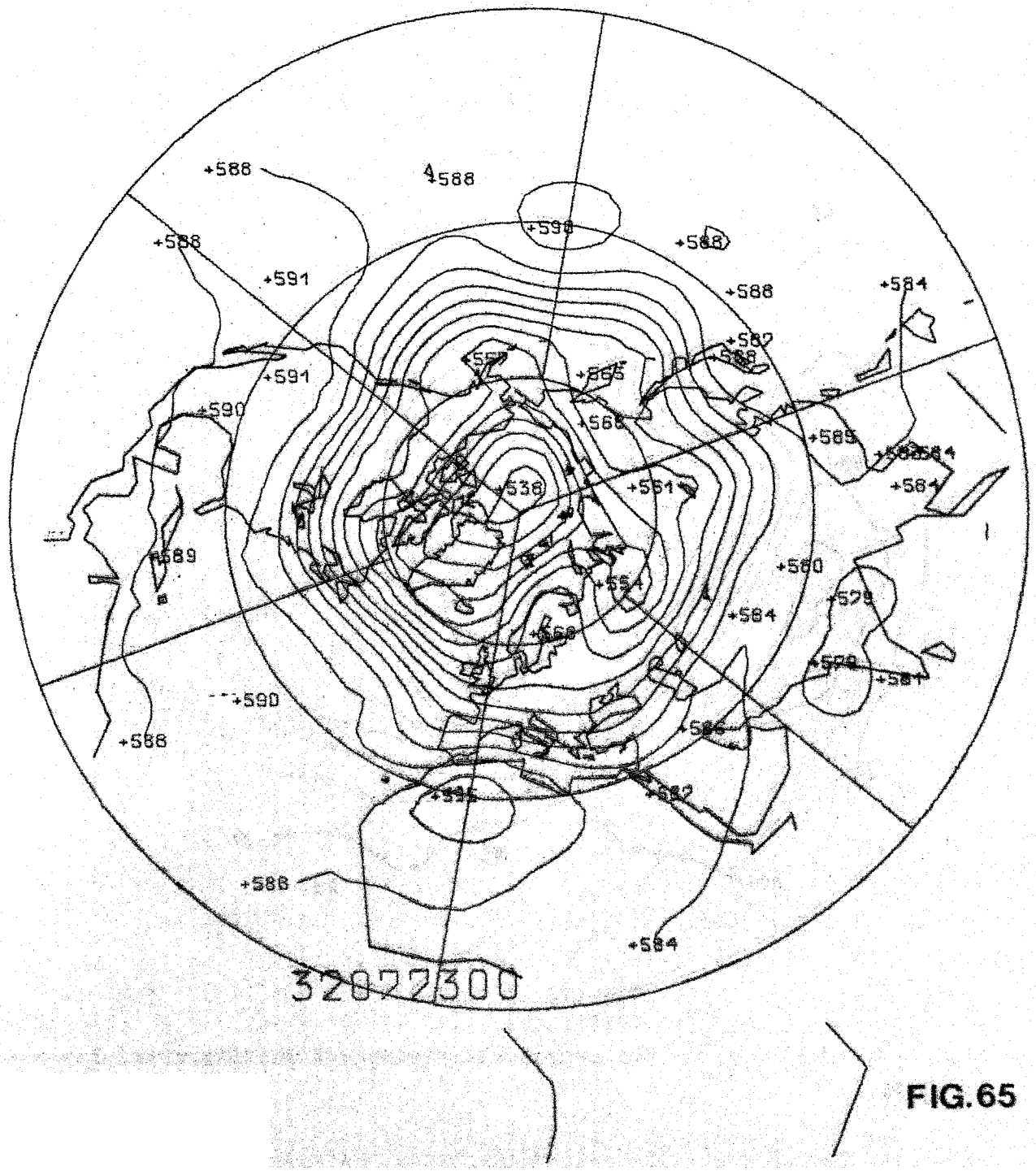


FIG.65

$[T]_{(t)}$ 300mb JULY 1973

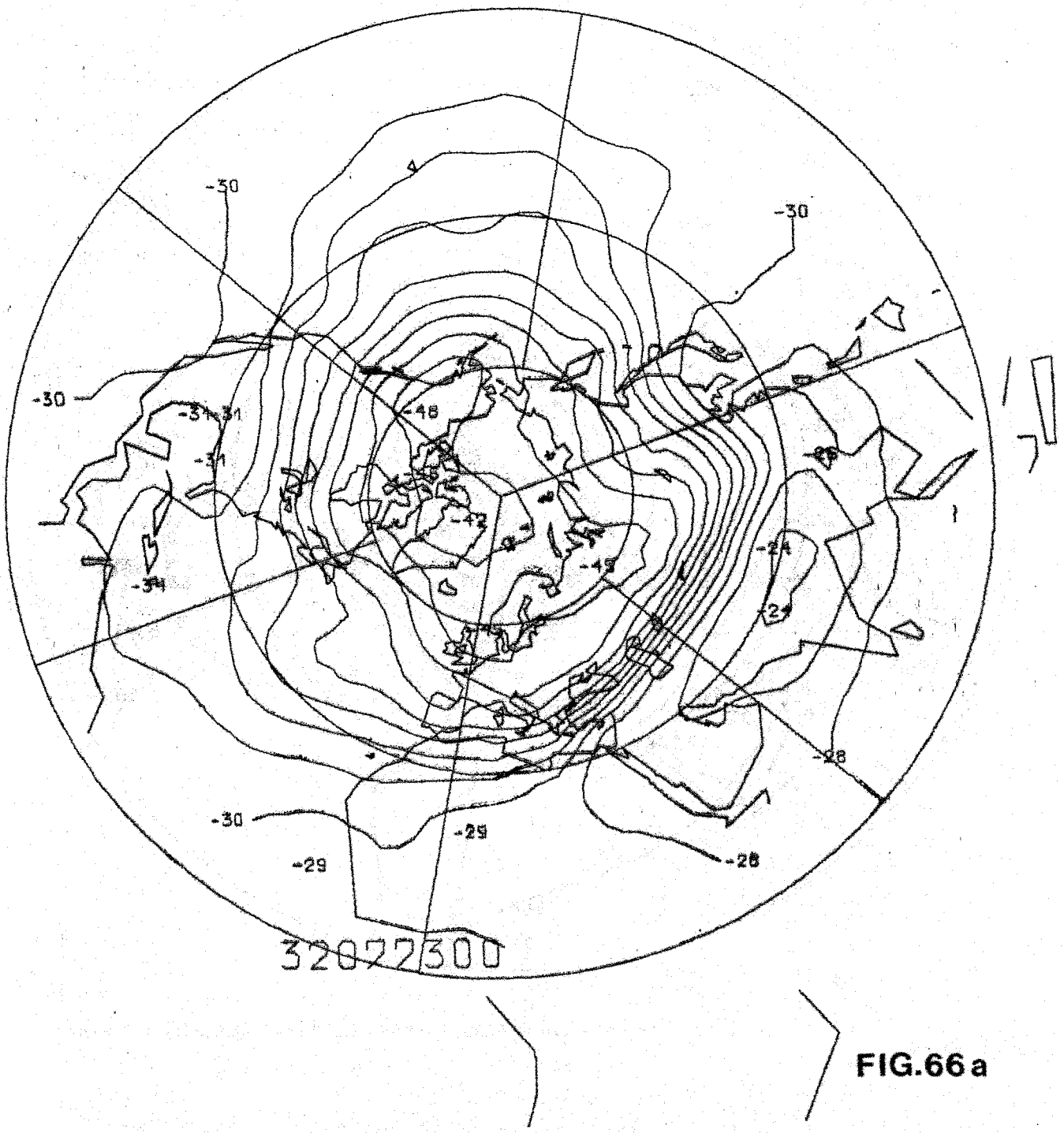


FIG.66a

$[\Phi]_{(t)}$ 300mb JULY 1973

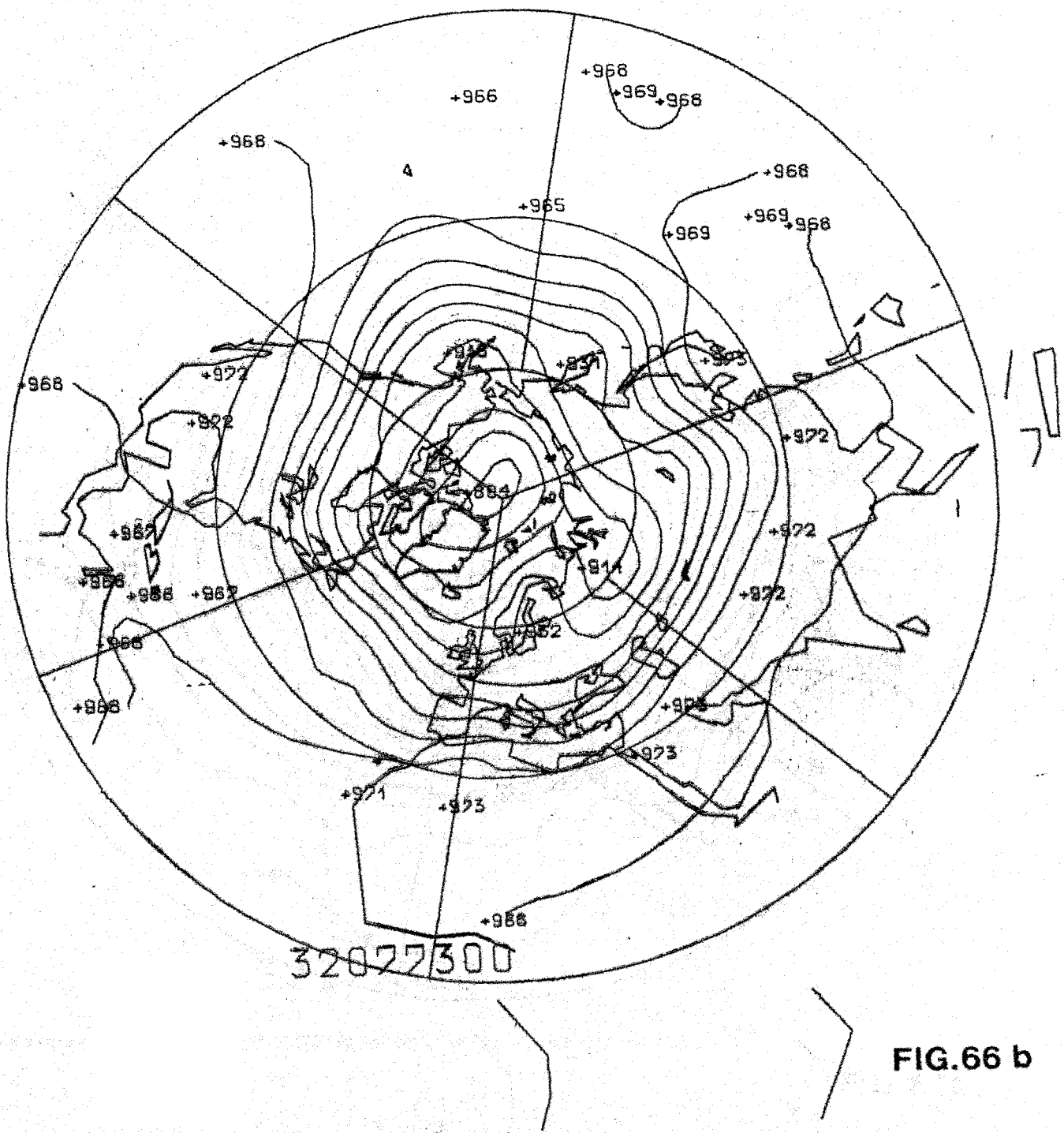
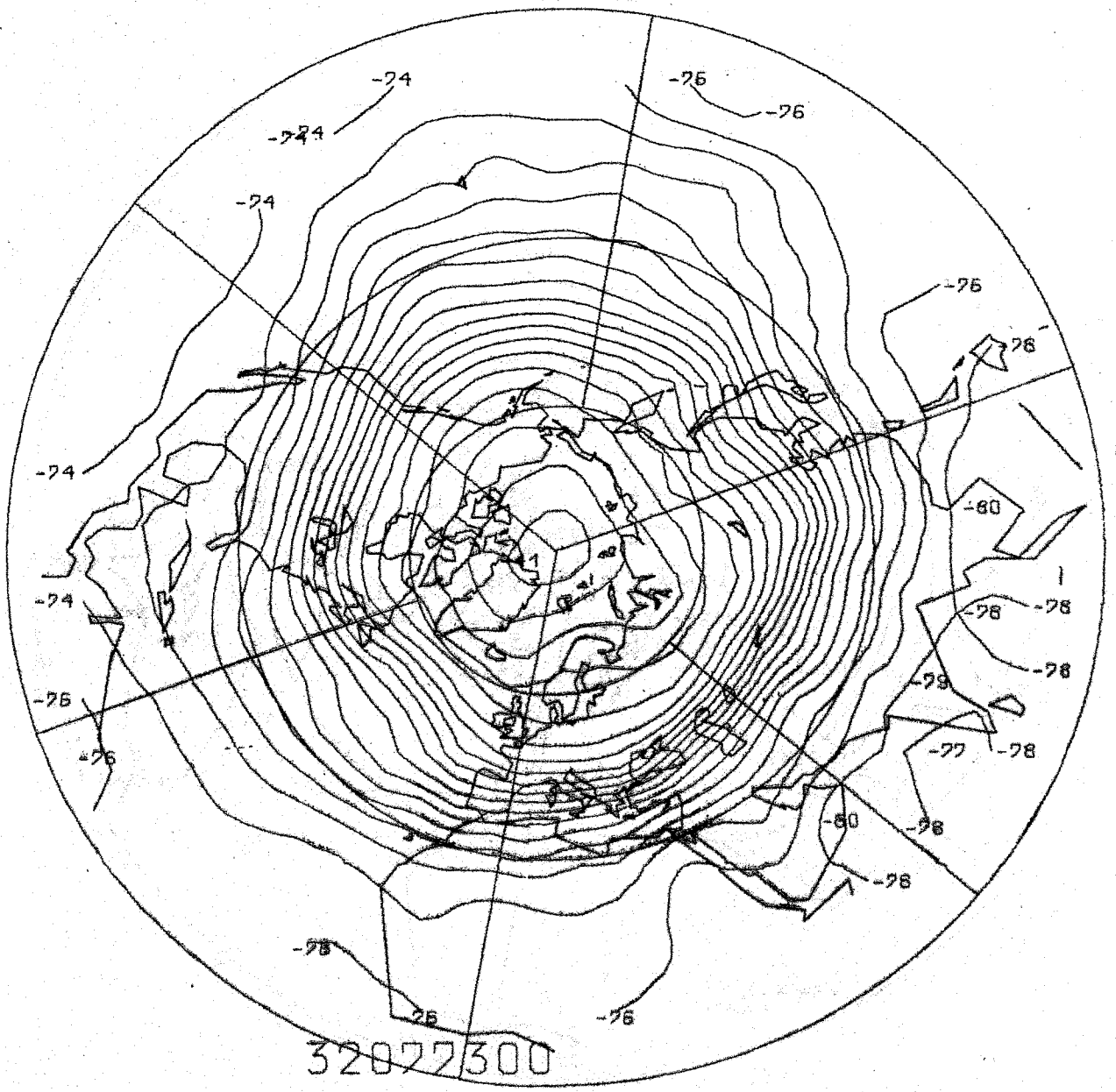


FIG.66 b

$[T]_{(t)}$ 100 mb JULY 1973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$[\Phi]_{(t)}$ 100 mb JULY 1973

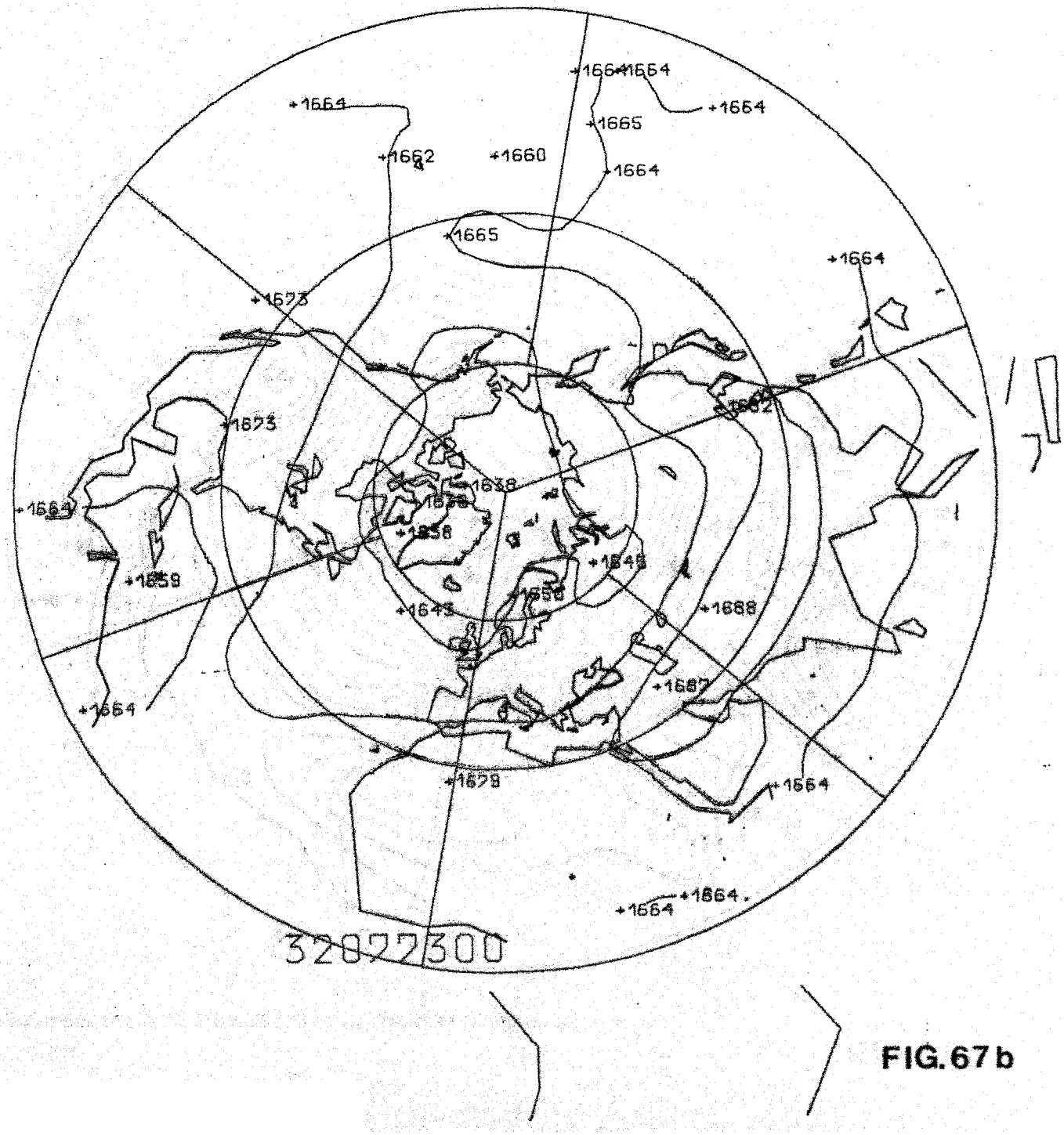
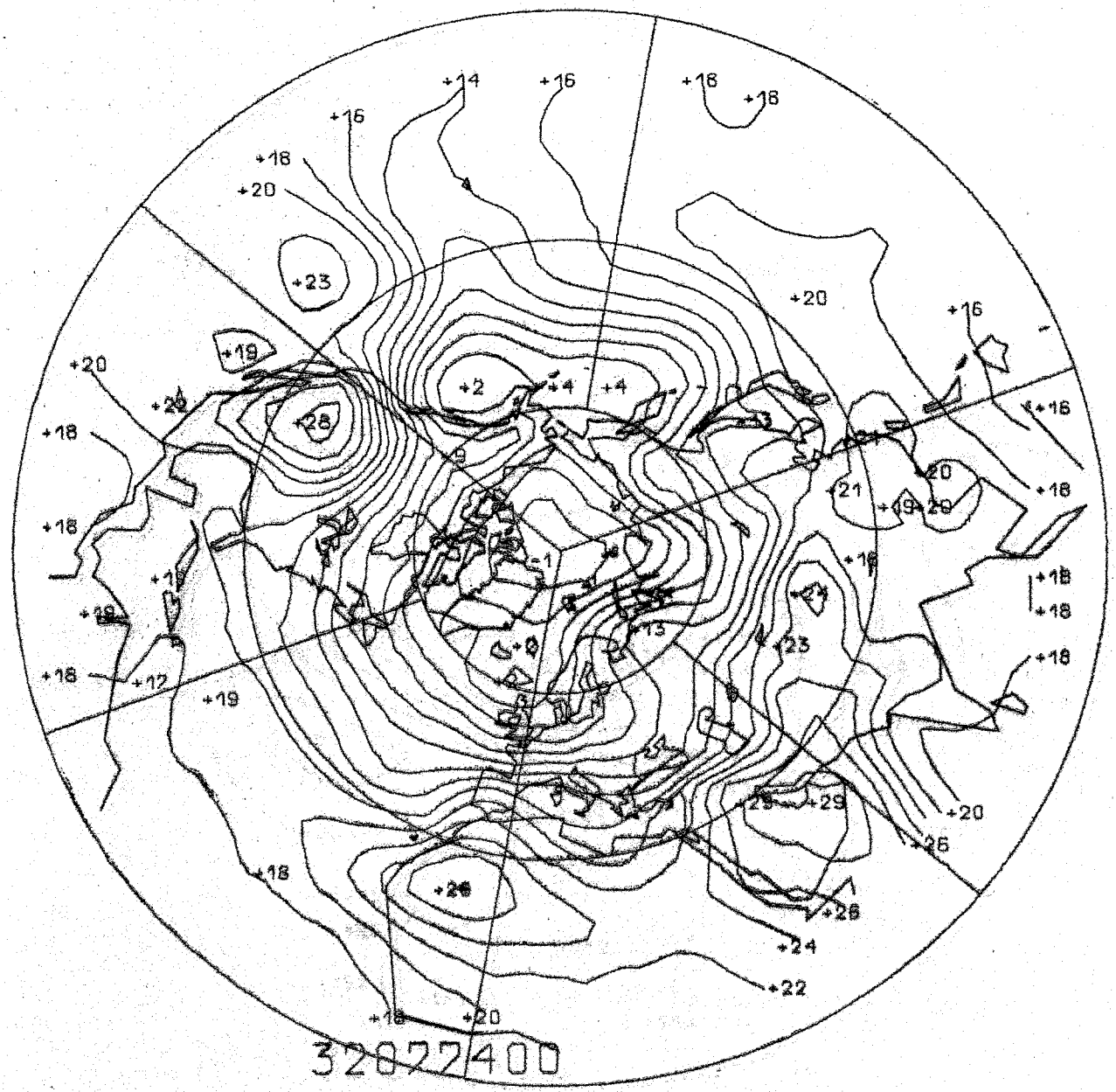


FIG. 67b

$[T]_{(t)}$ 850 mb JULY 1974



32022400

FIG.68a

$[\phi]_{(t)}$ 850mb JULY 1974

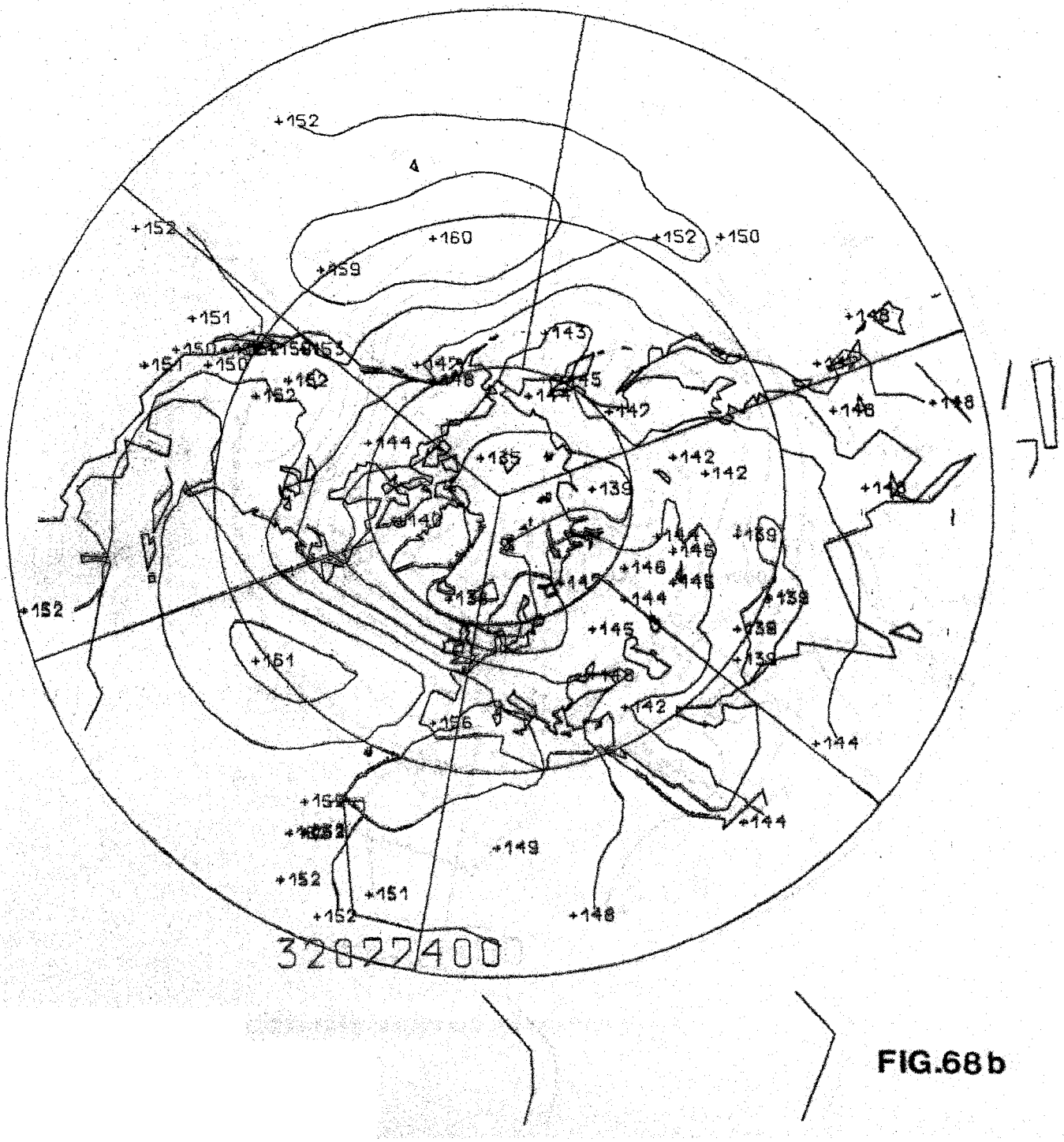
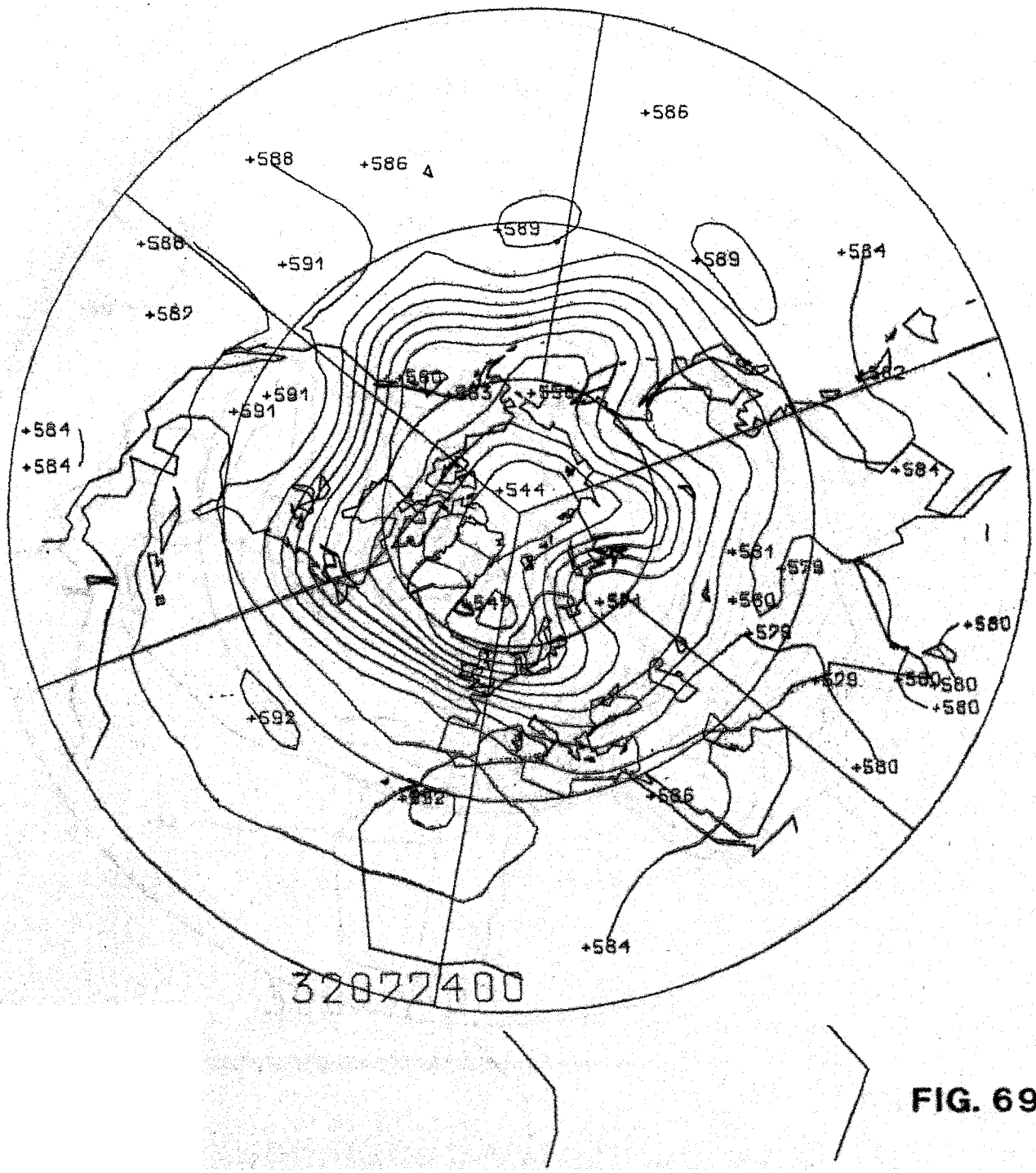


FIG.68b

$[\phi]_{(t)}$ 500 mb JULY 1974



32072400

FIG. 69

$[T]_{(t)}$ 300 mb JULY 1974

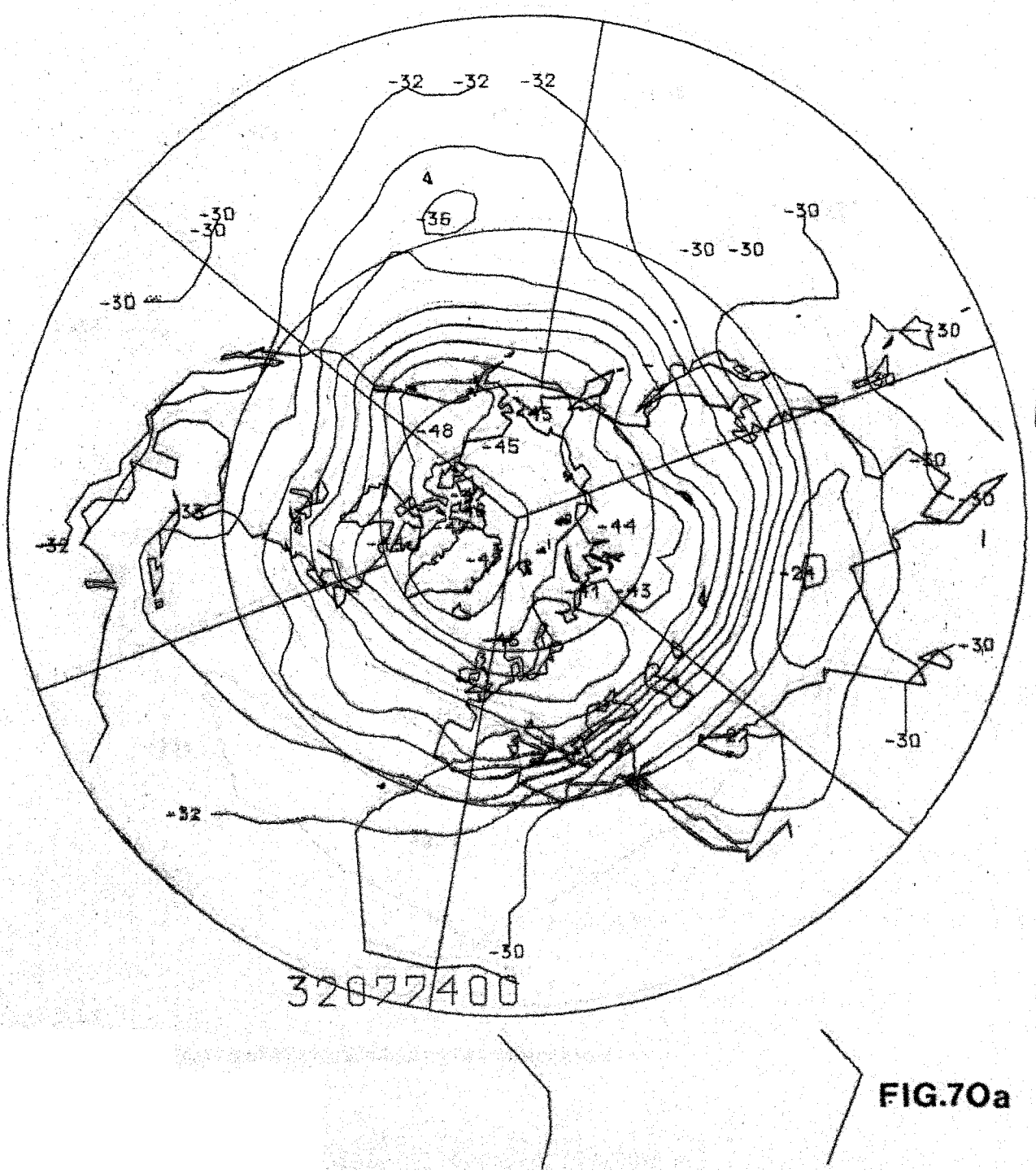


FIG.7Oa

$[\phi]_{(t)}$ 300 mb JULY 1974

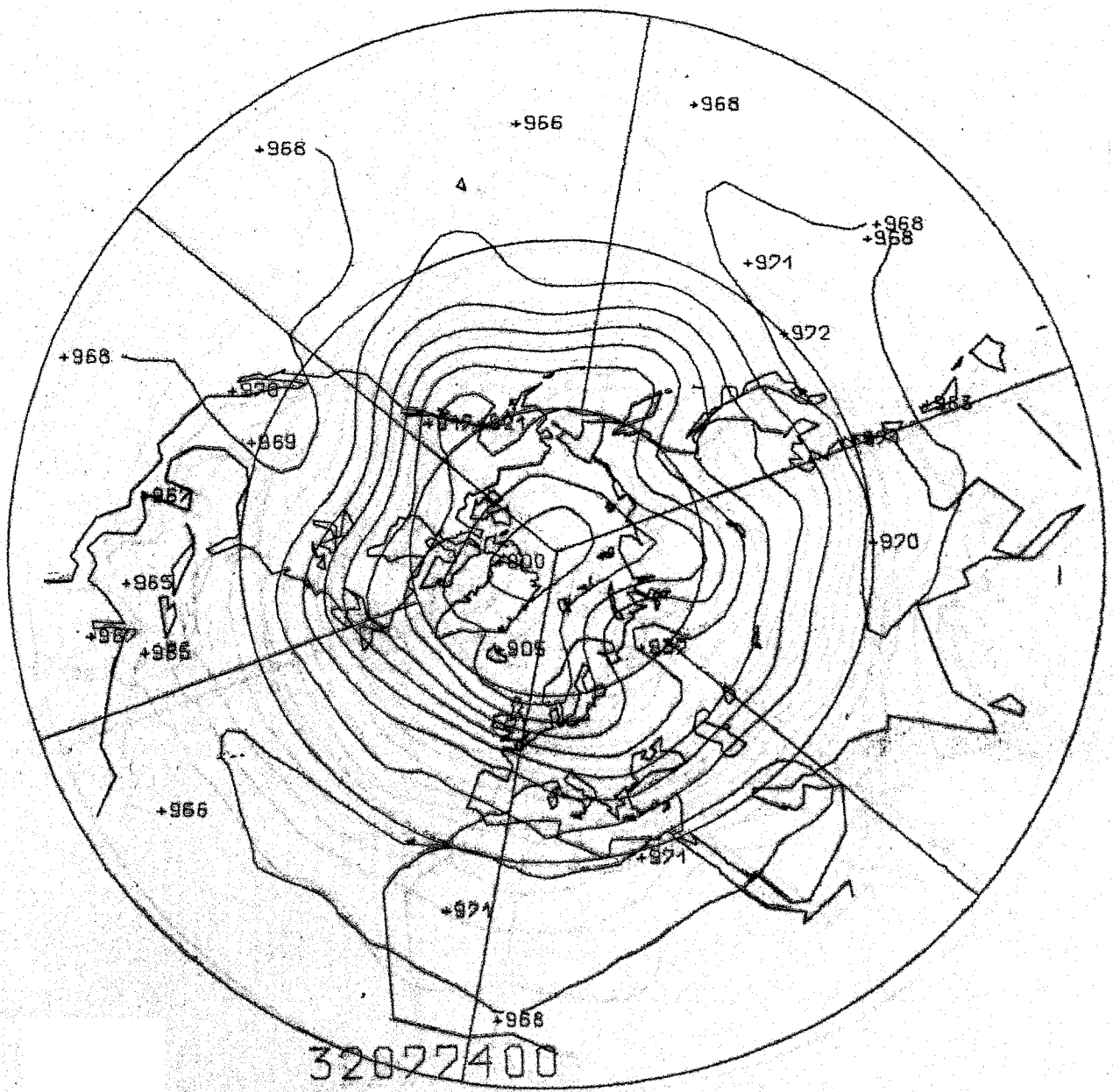


FIG. 70b

$[T]_{(t)}$ 100 mb JULY 1974

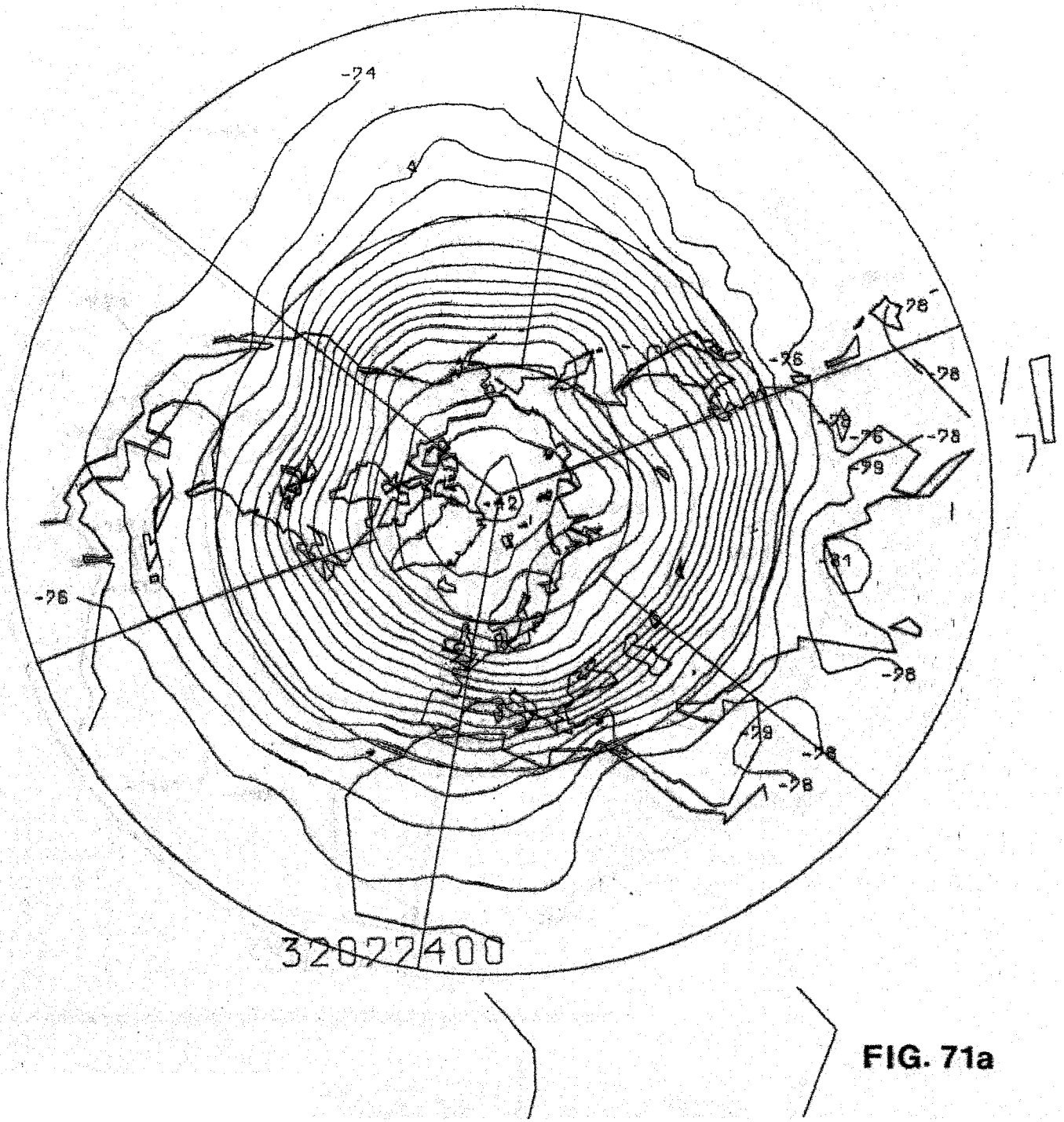


FIG. 71a

$[T]_{(t)}$ 100 mb JULY 1974

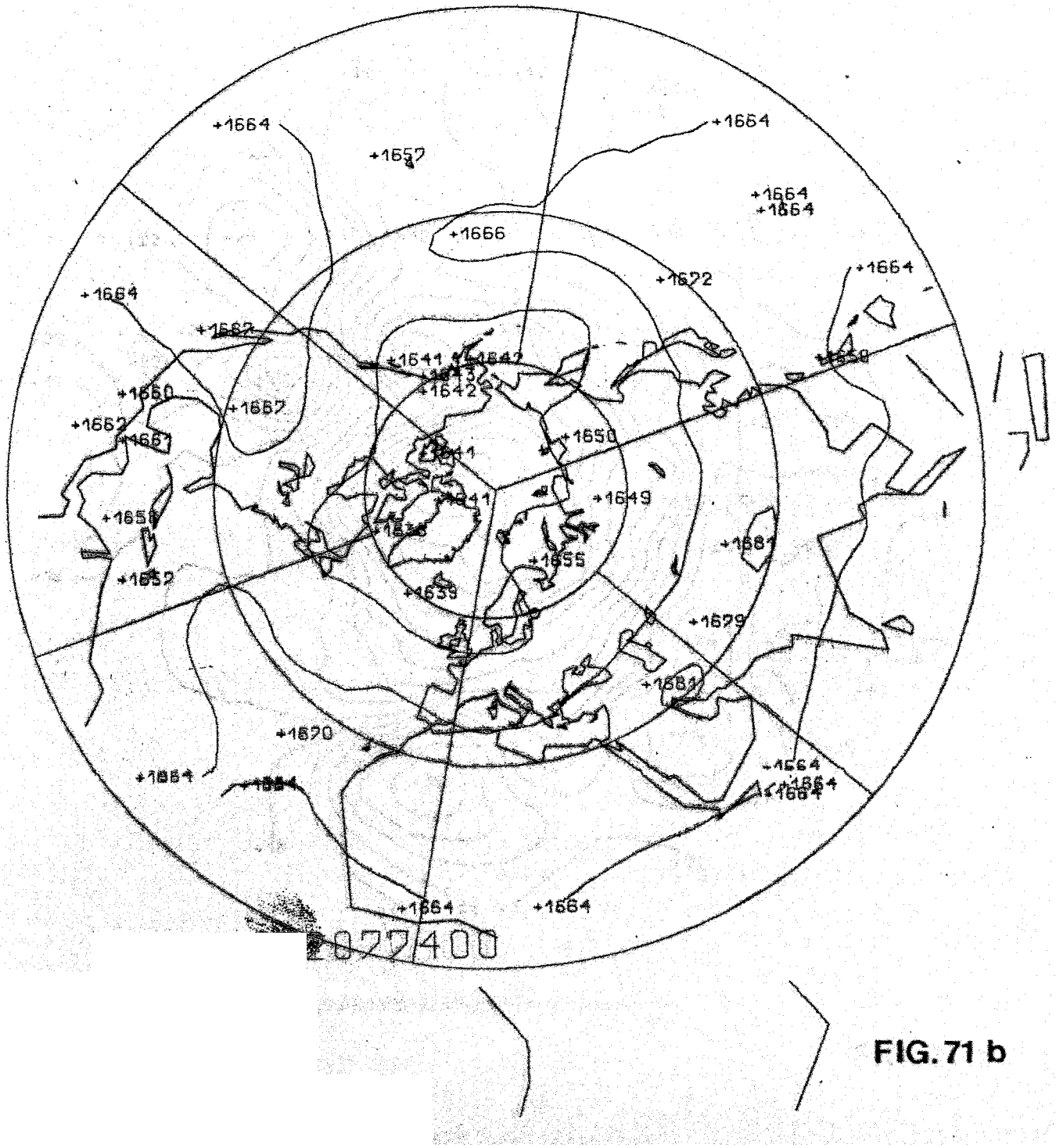


FIG. 71 b

$[T]_{(t)}$ 850 mb JULY 1975

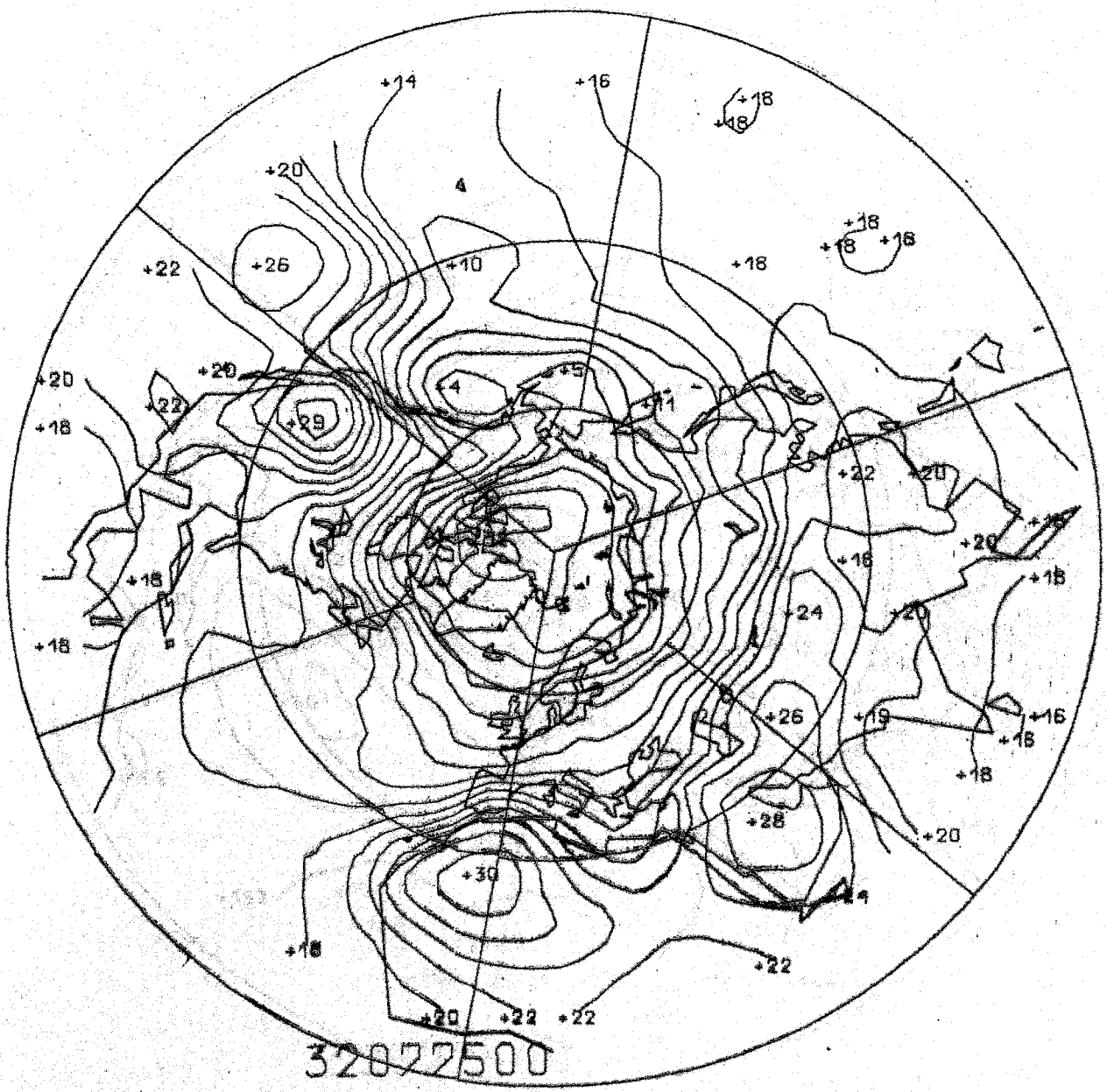


FIG. 72 a

$[\Phi]_{(t)}$ **850 mb JULY 1975**

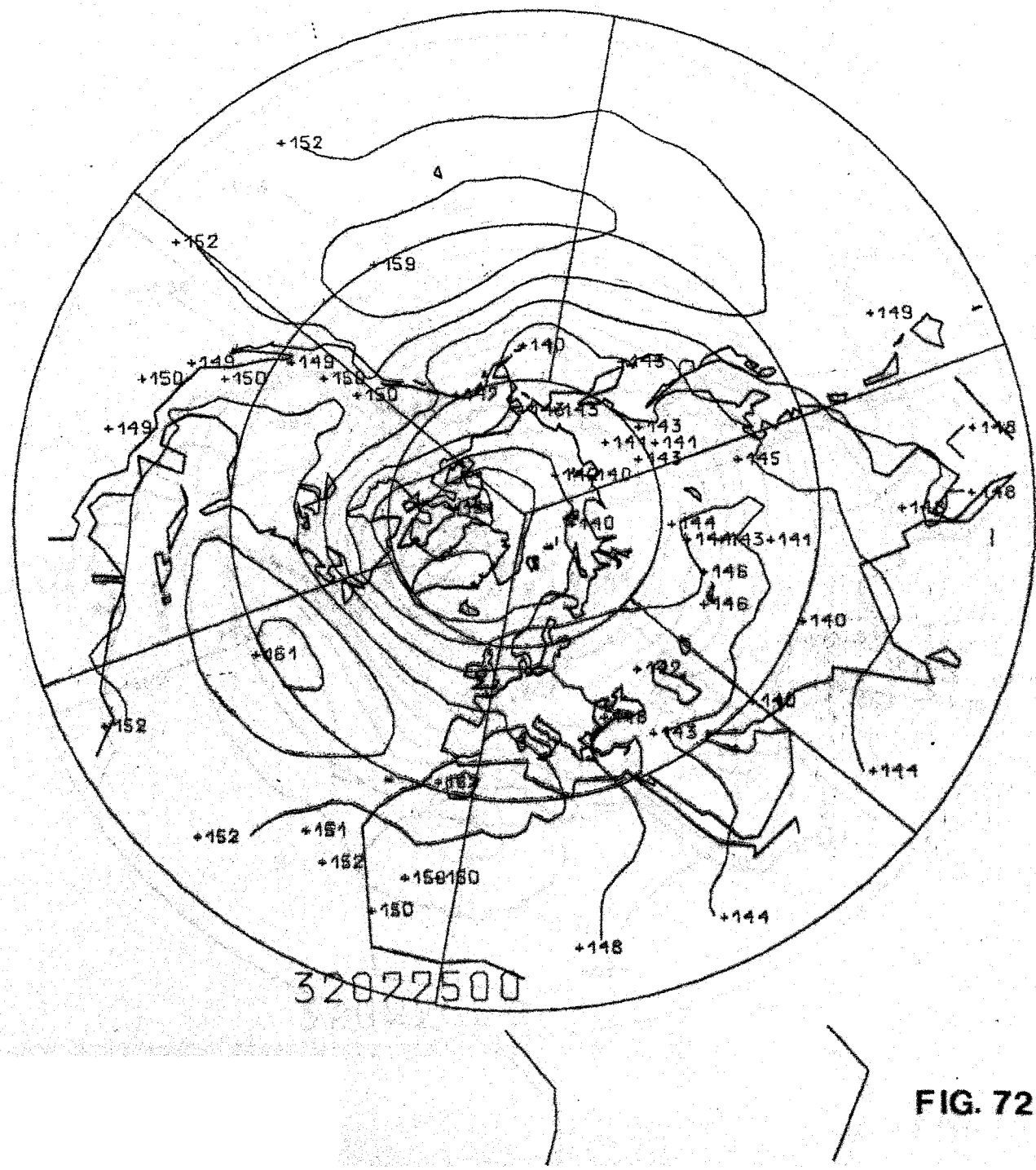


FIG. 72b

$[\Phi]_{(t)}$ 500 mb JULY 1975

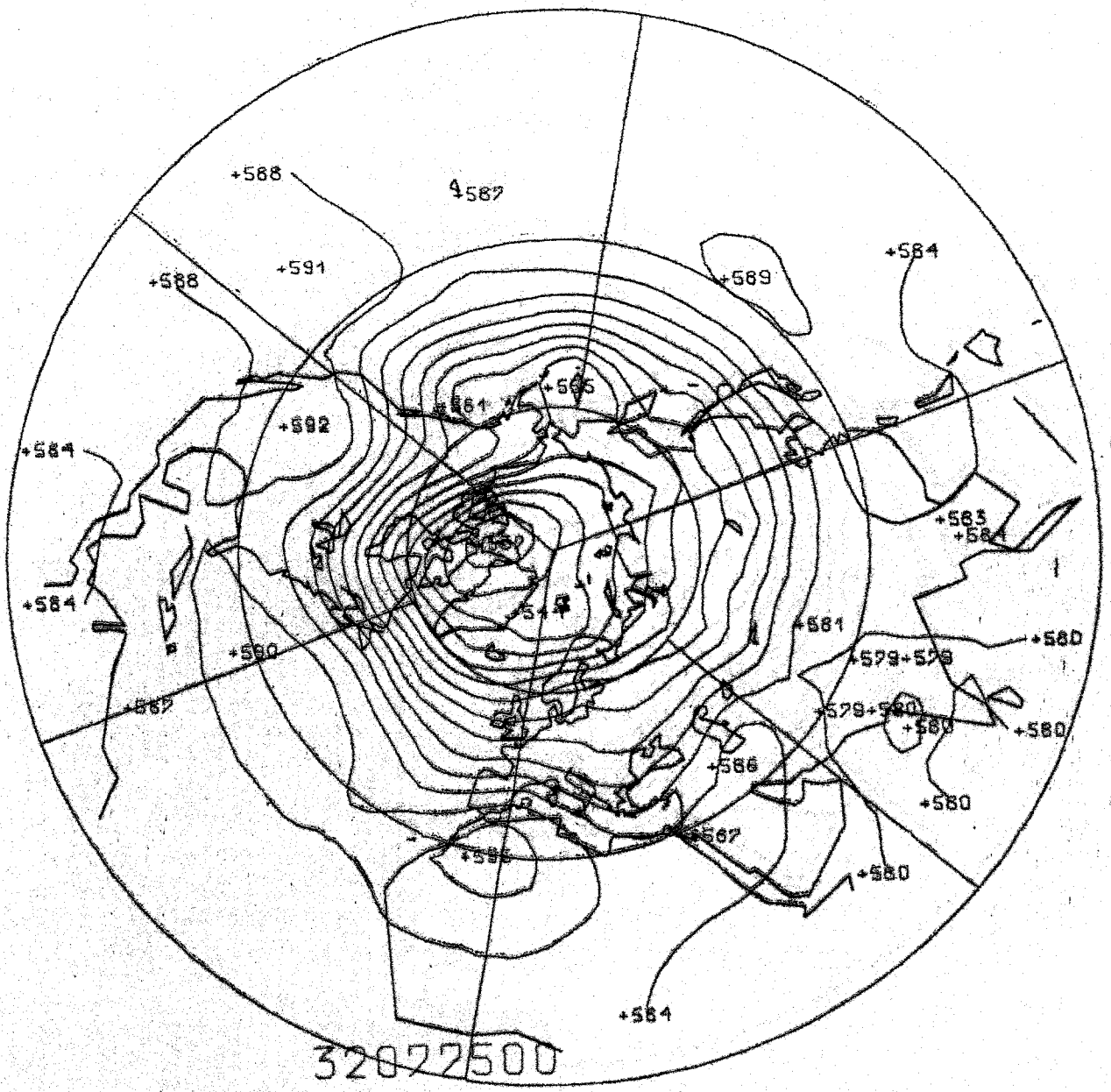


FIG. 73

$[T]_{(t)}$ 300 mb JULY 1975

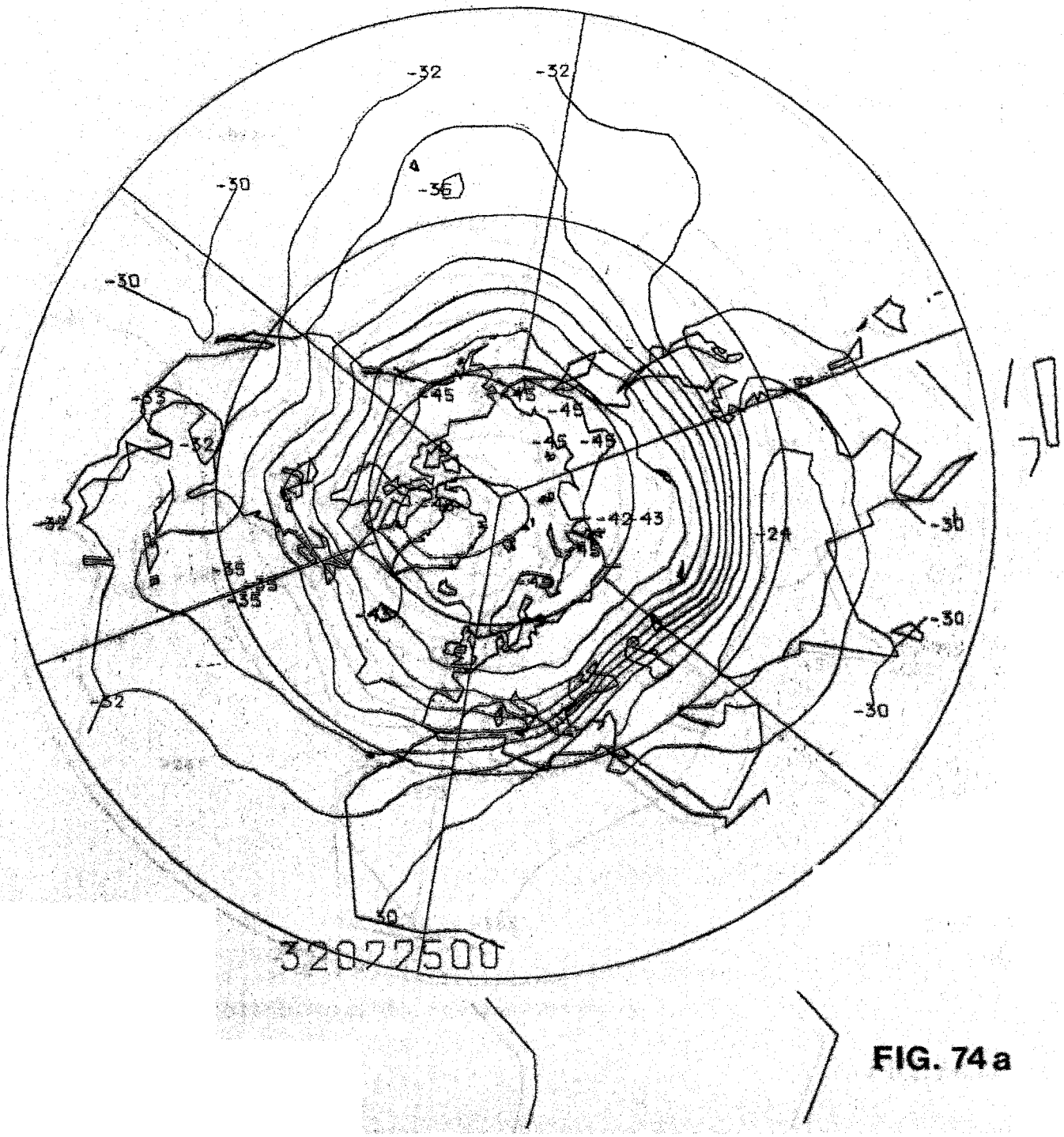
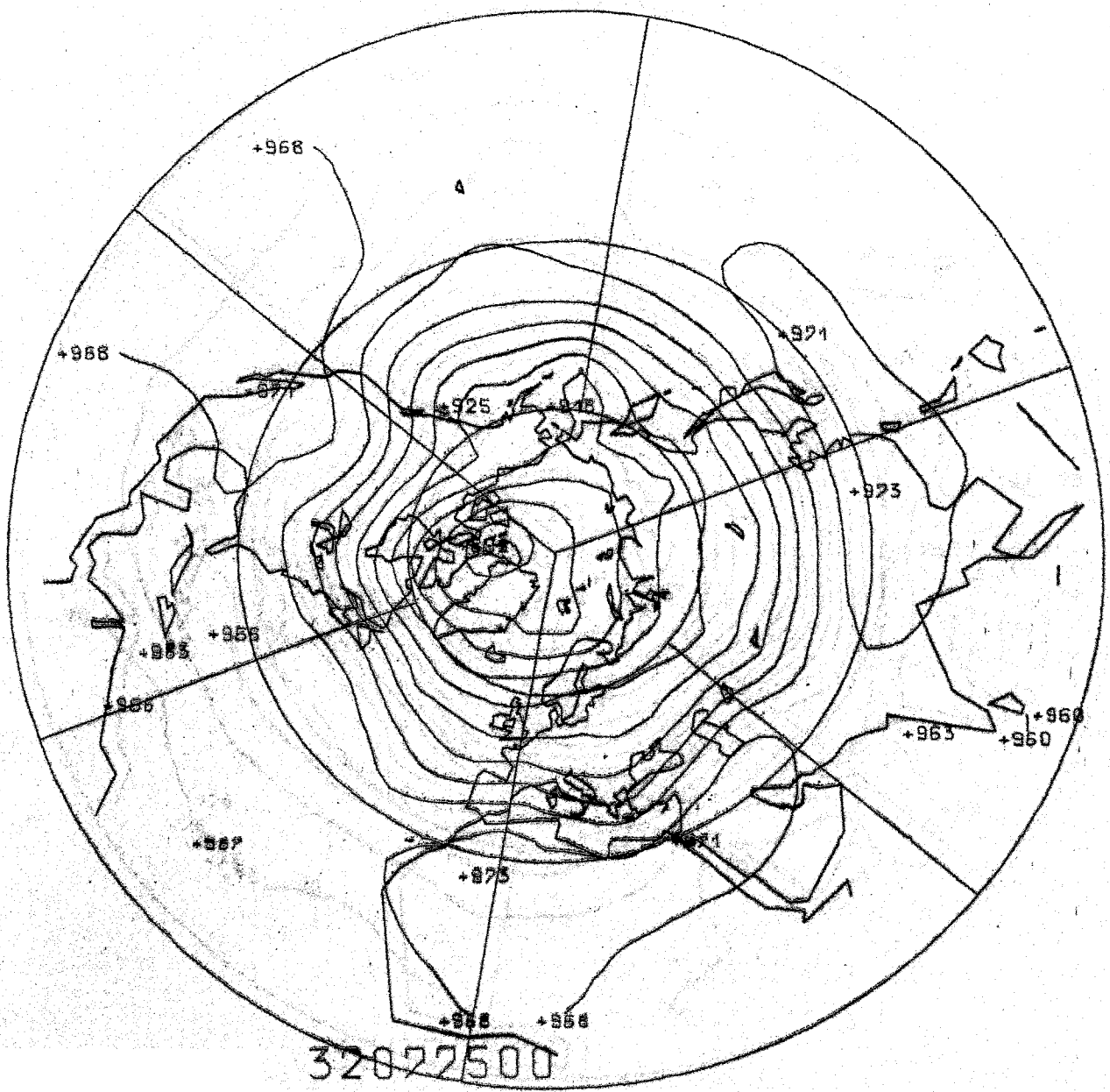


FIG. 74a

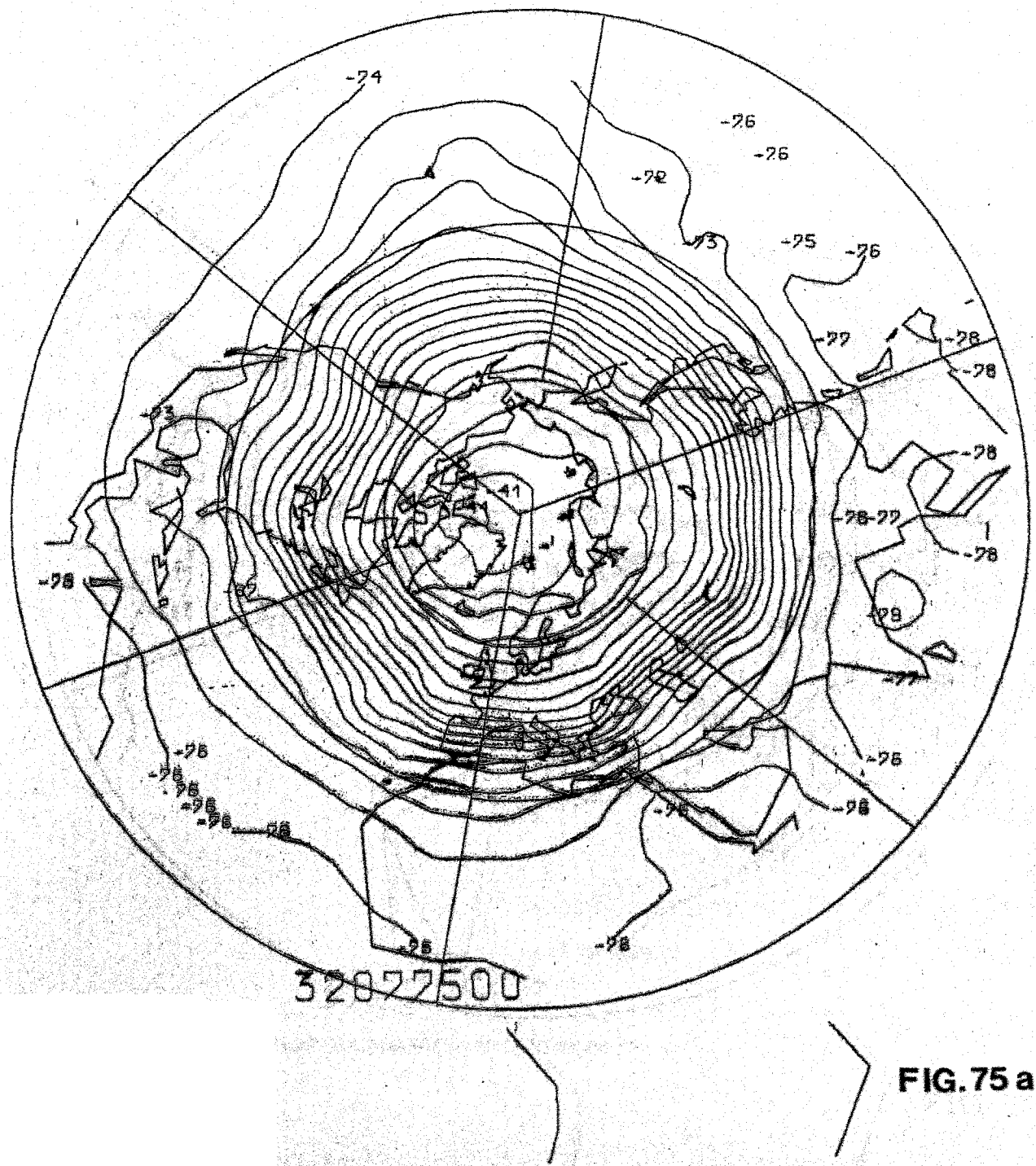
$[\Phi]_{(t)}$ 300 mb JULY 1975



32022500

FIG.74 b

$[T]_{(t)}$ 100 mb JULY 1975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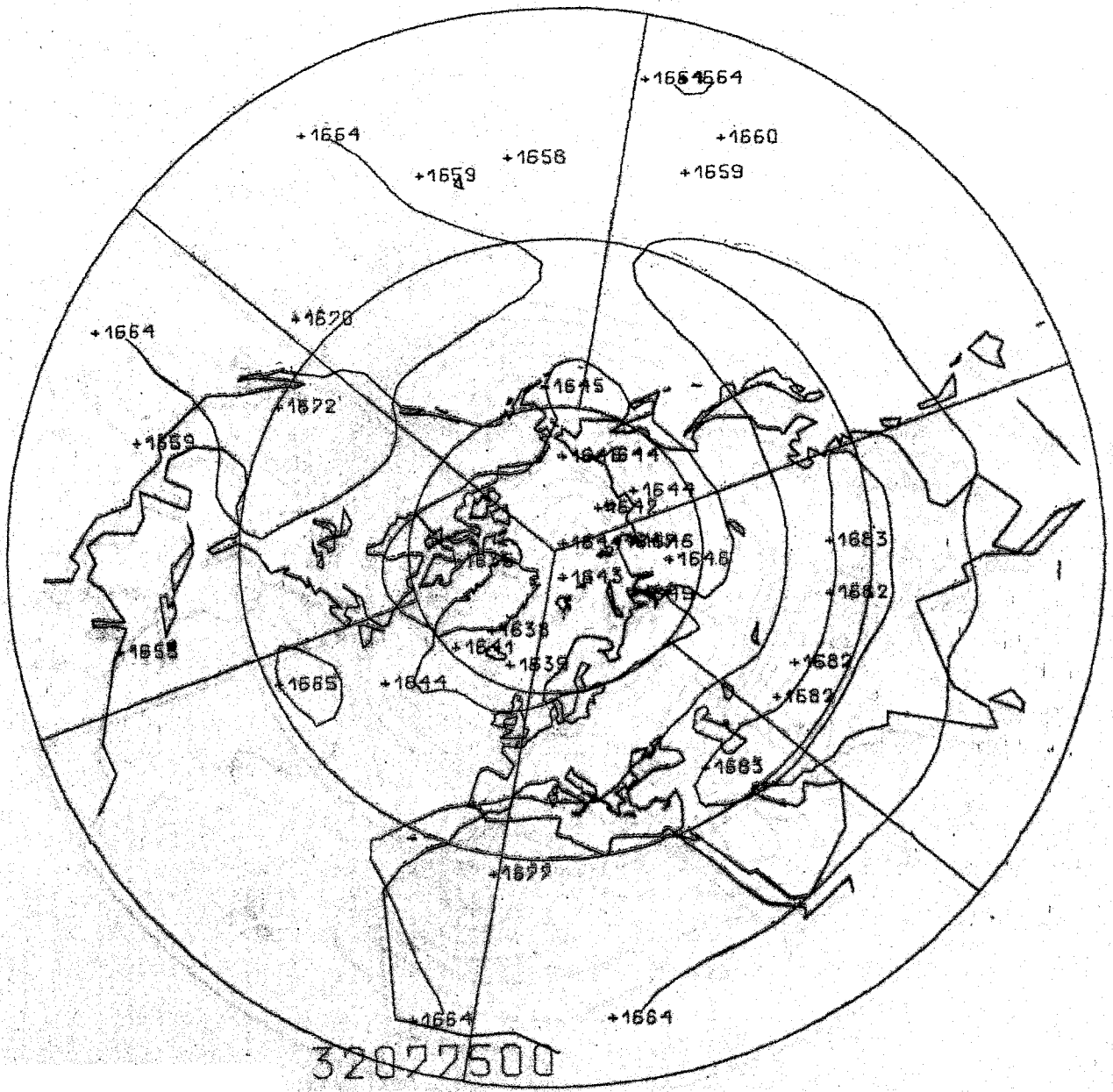
$[\Phi]_{(t)}$ 100 mb JULY 1975



3207500

FIG. 75 b

$[T]_{(t)}$ 850mb JULY 1976

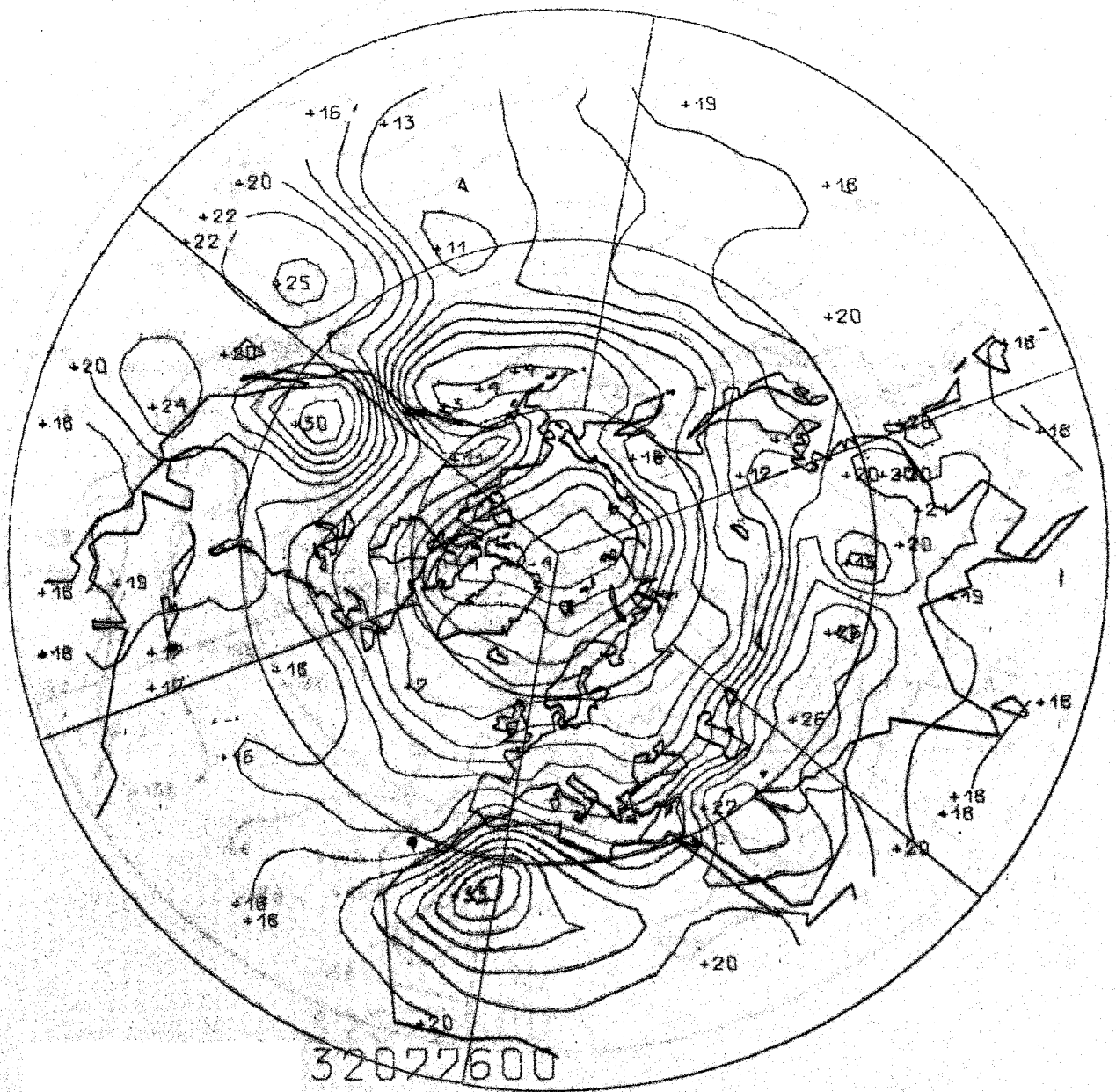


FIG.76 a

$[\Phi]_{(t)}$ 850 mb JULY 1976

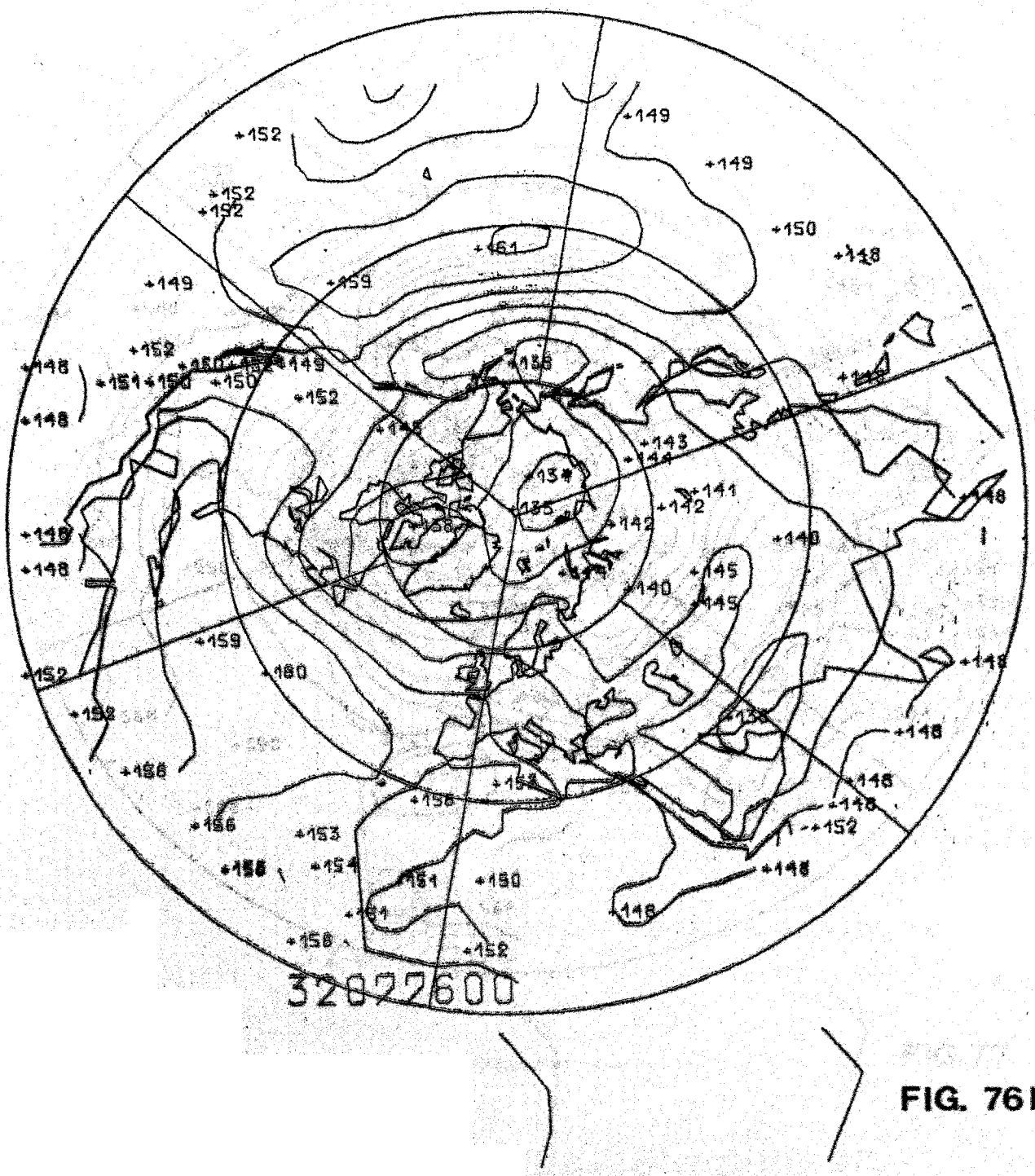
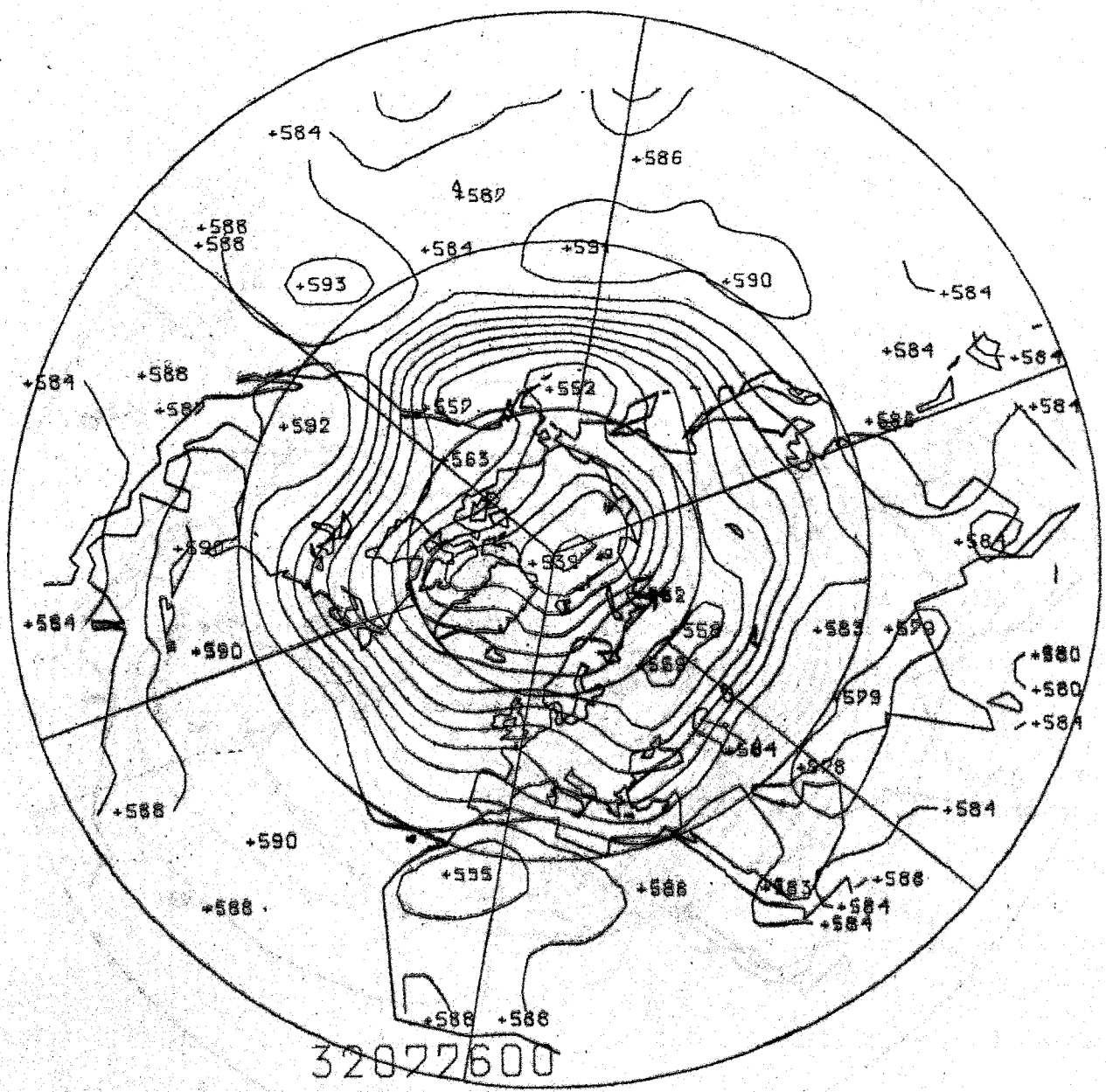


FIG. 76b

$[\Phi]_{(t)}$ 500 mb JULY 1976



32072600

FIG. 77

$[T]_{(t)}$ 300mb JULY 1976

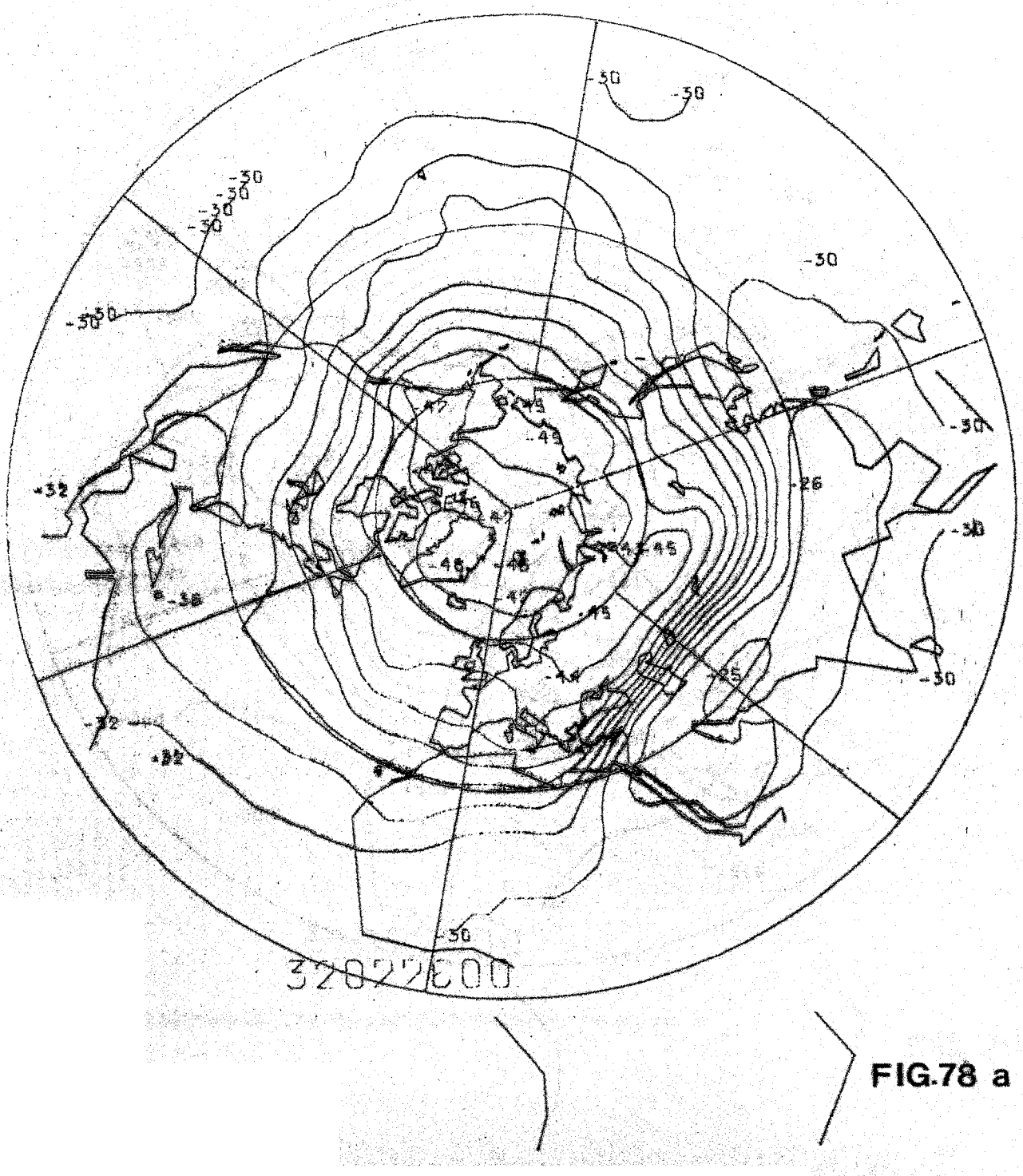
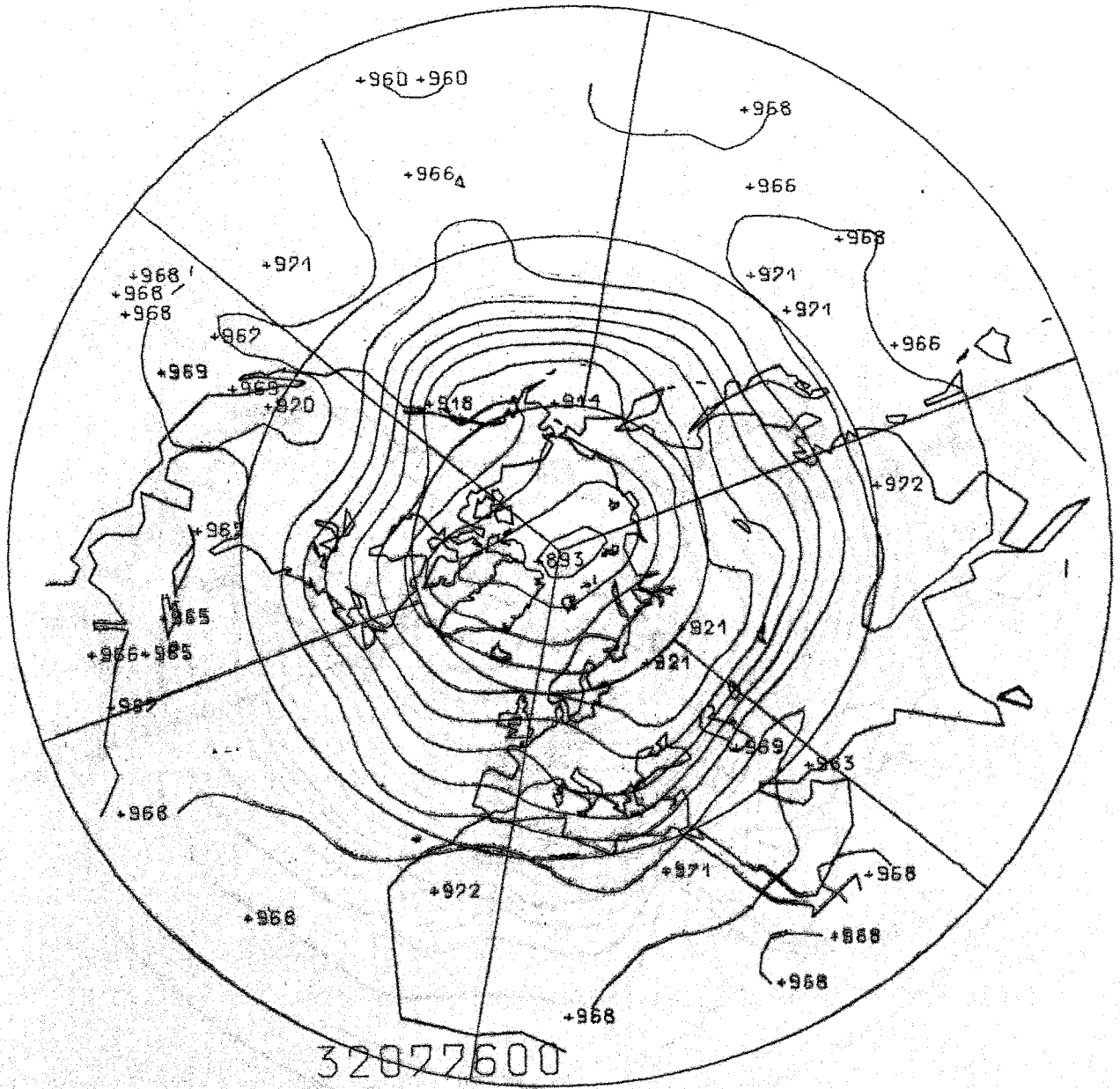


FIG.78 a

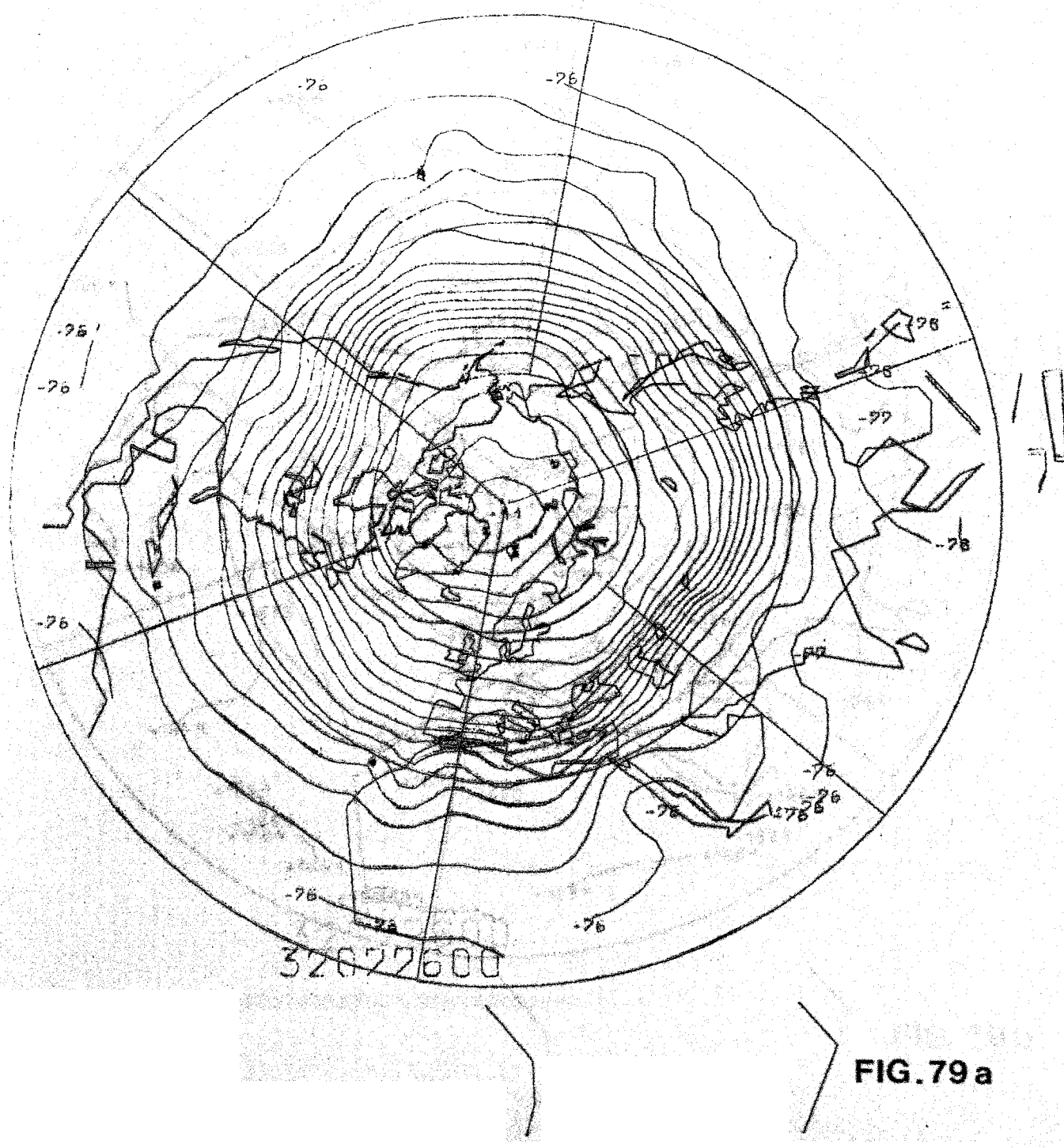
$[\Phi]_{(t)}$ 300mb JULY 1976



32027600

FIG. 78 b

$[T]_{(t)}$ 100mb JULY 1976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$[\Phi]_{(t)}$ 100 mb JULY 1976

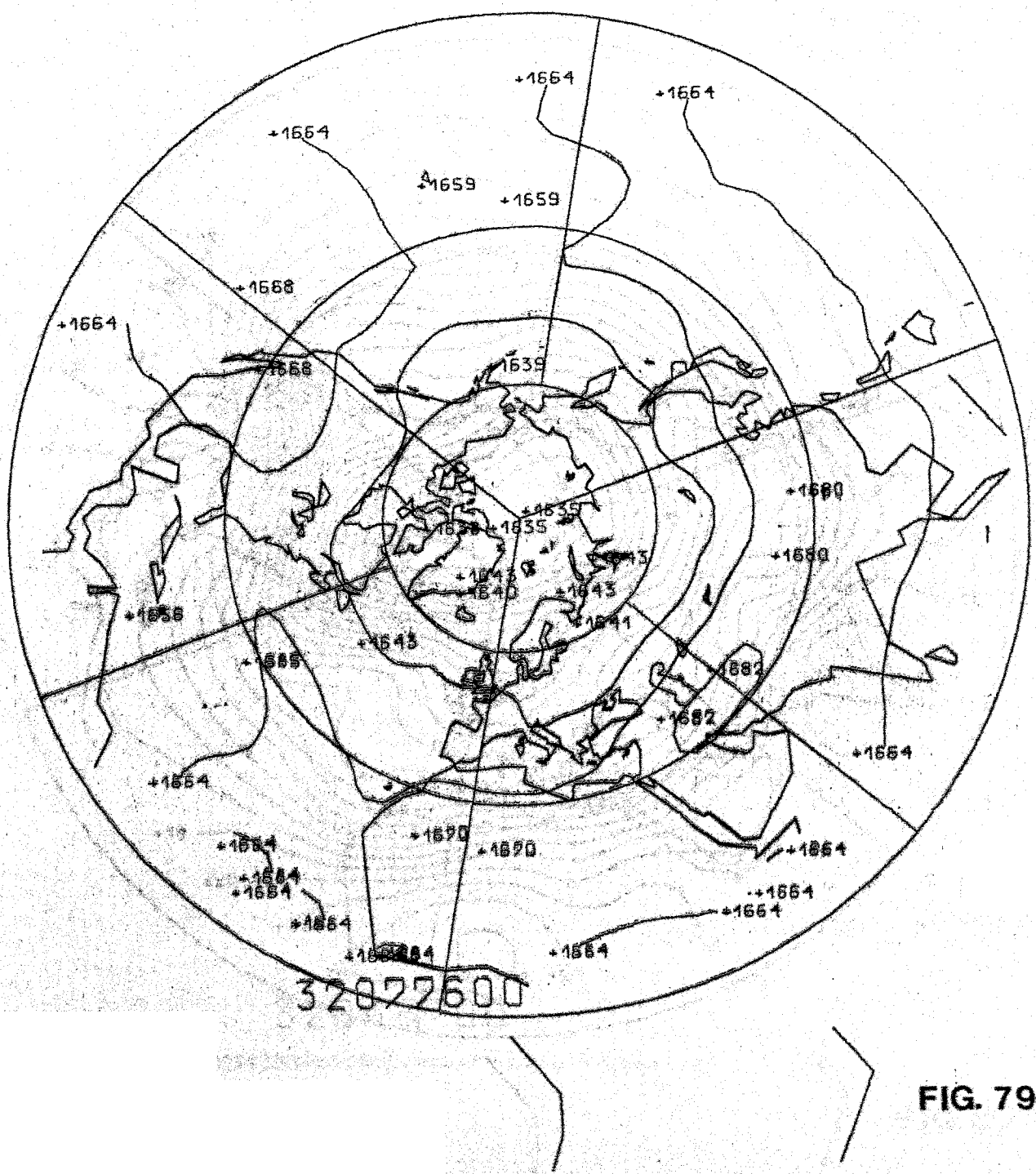


FIG. 79 b

$[T]_{(t)}$ 850mb APRIL 1967

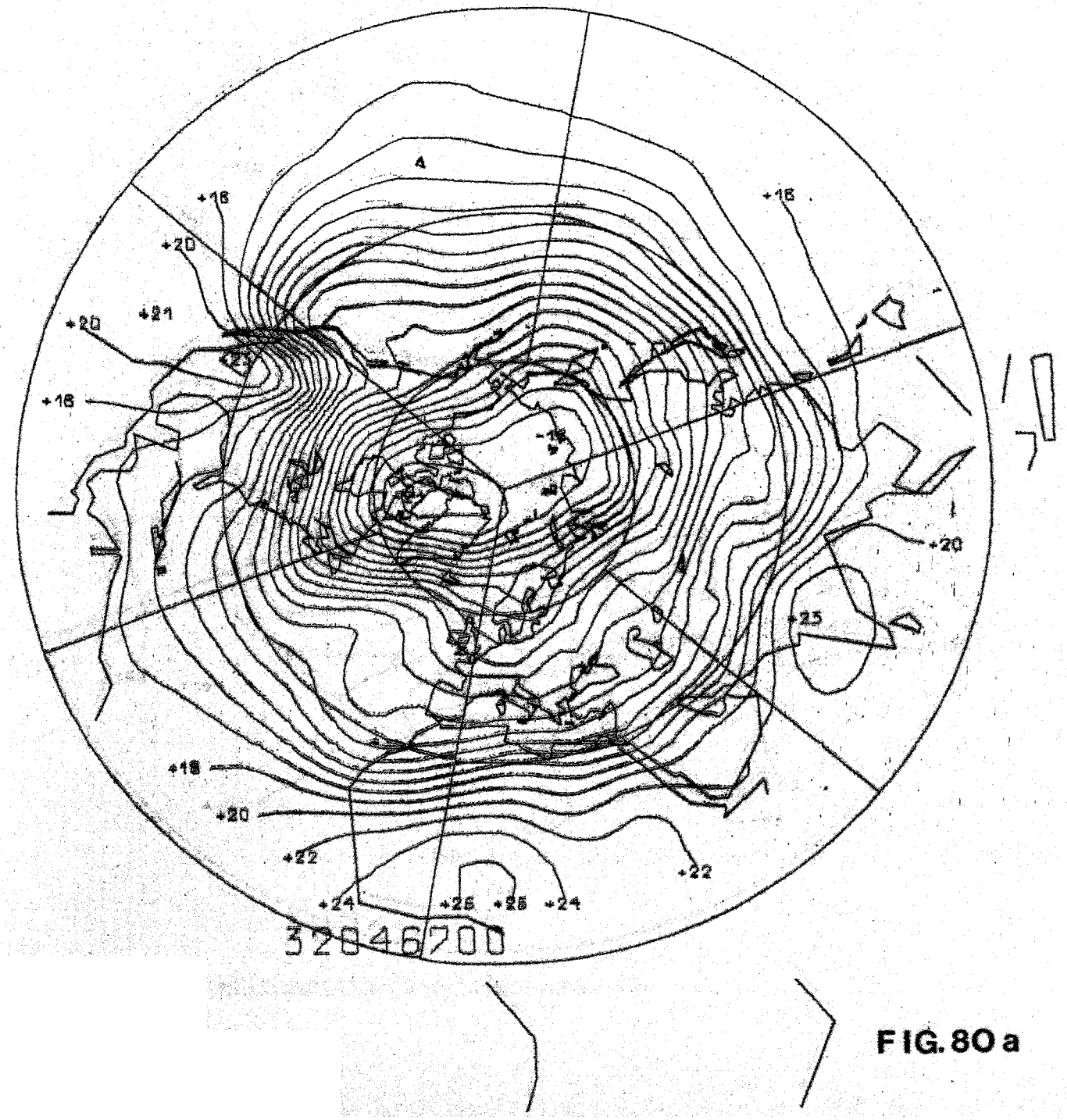


FIG. 80 a

$[\phi]_{(t)}$ 850mb APRIL 1967

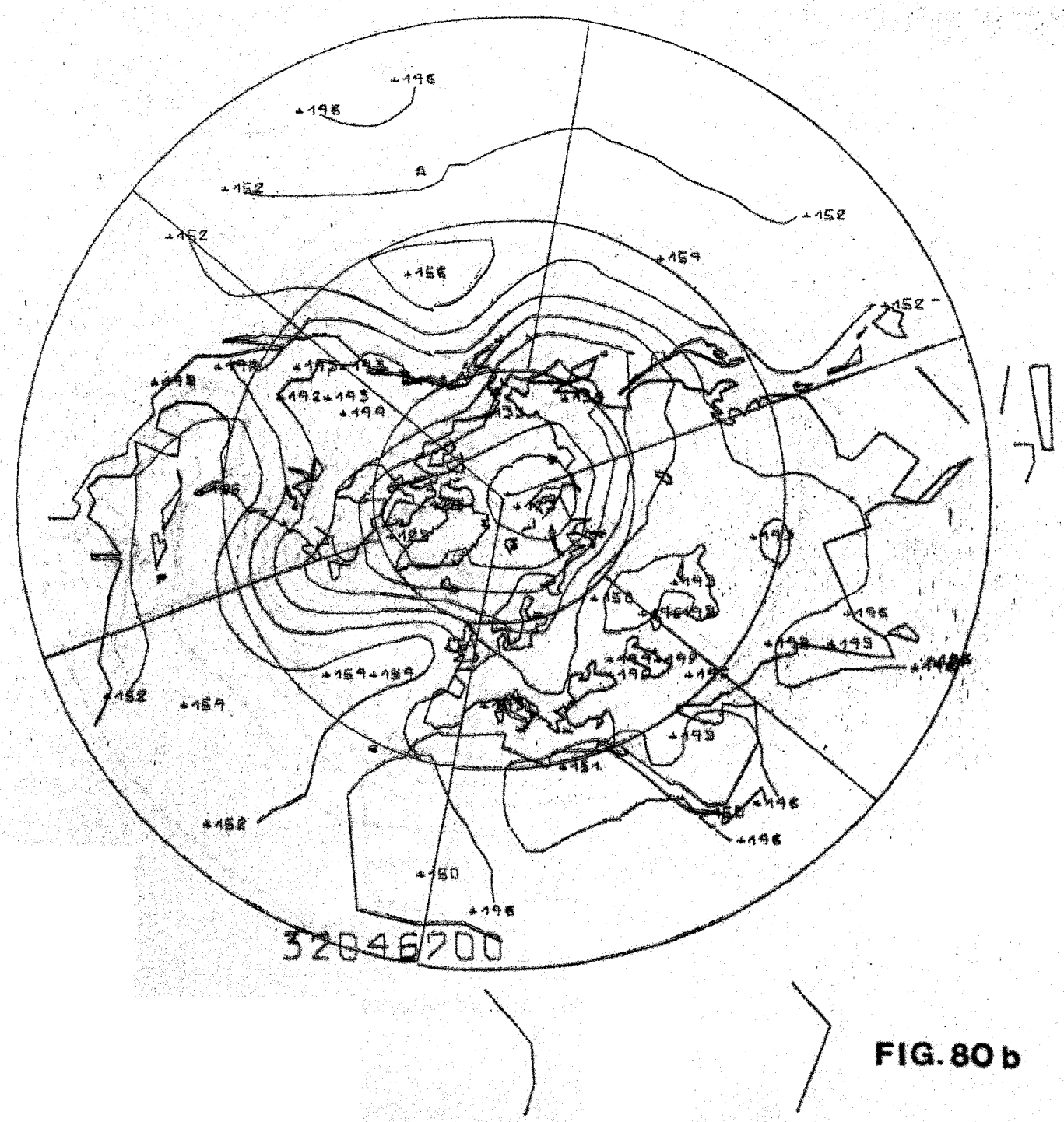
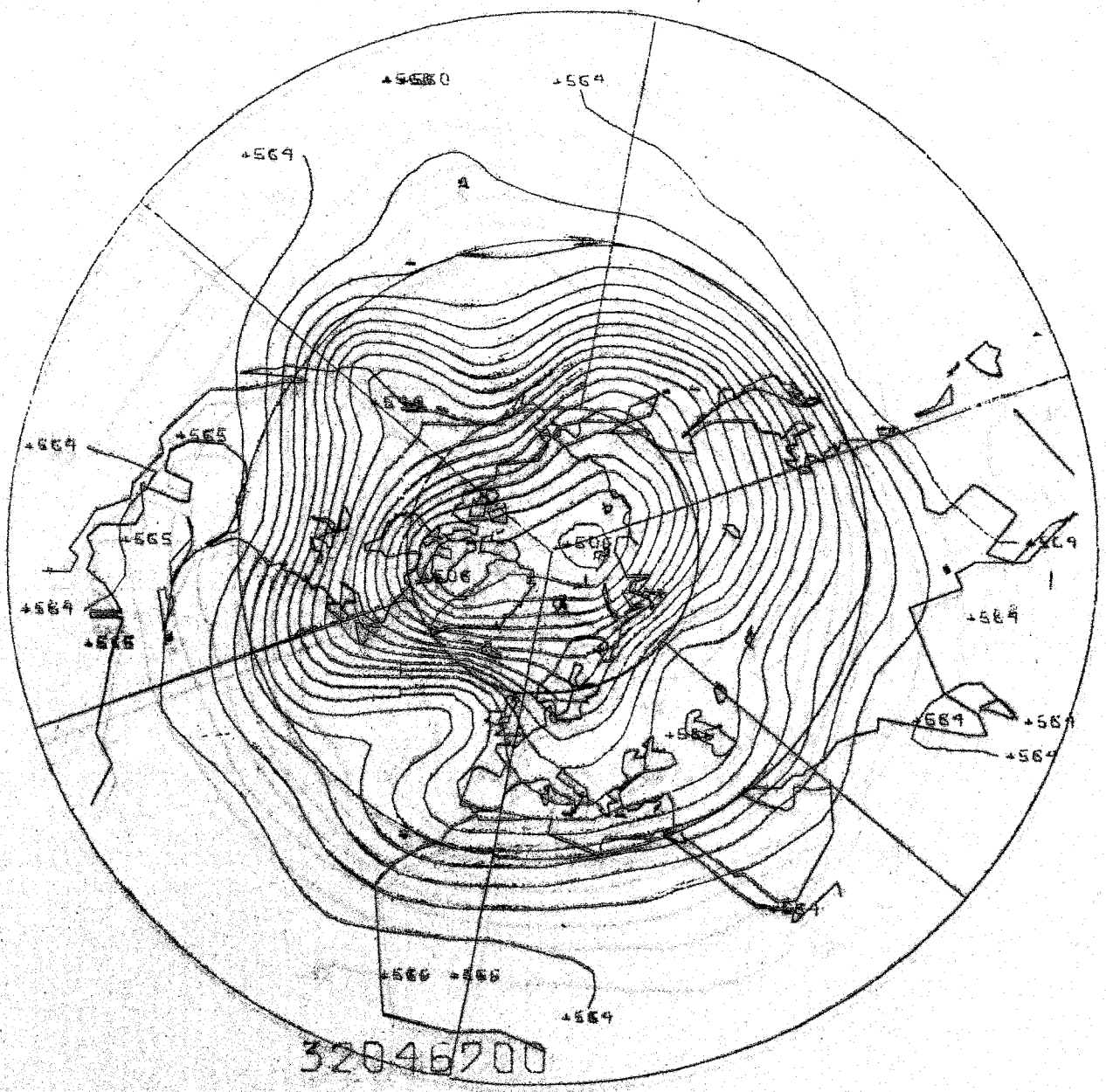


FIG. 80 b

$[\phi]_{(t)}$ 500mb APRIL 1967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$[T]_{(t)}$ 300mb APRIL 1967

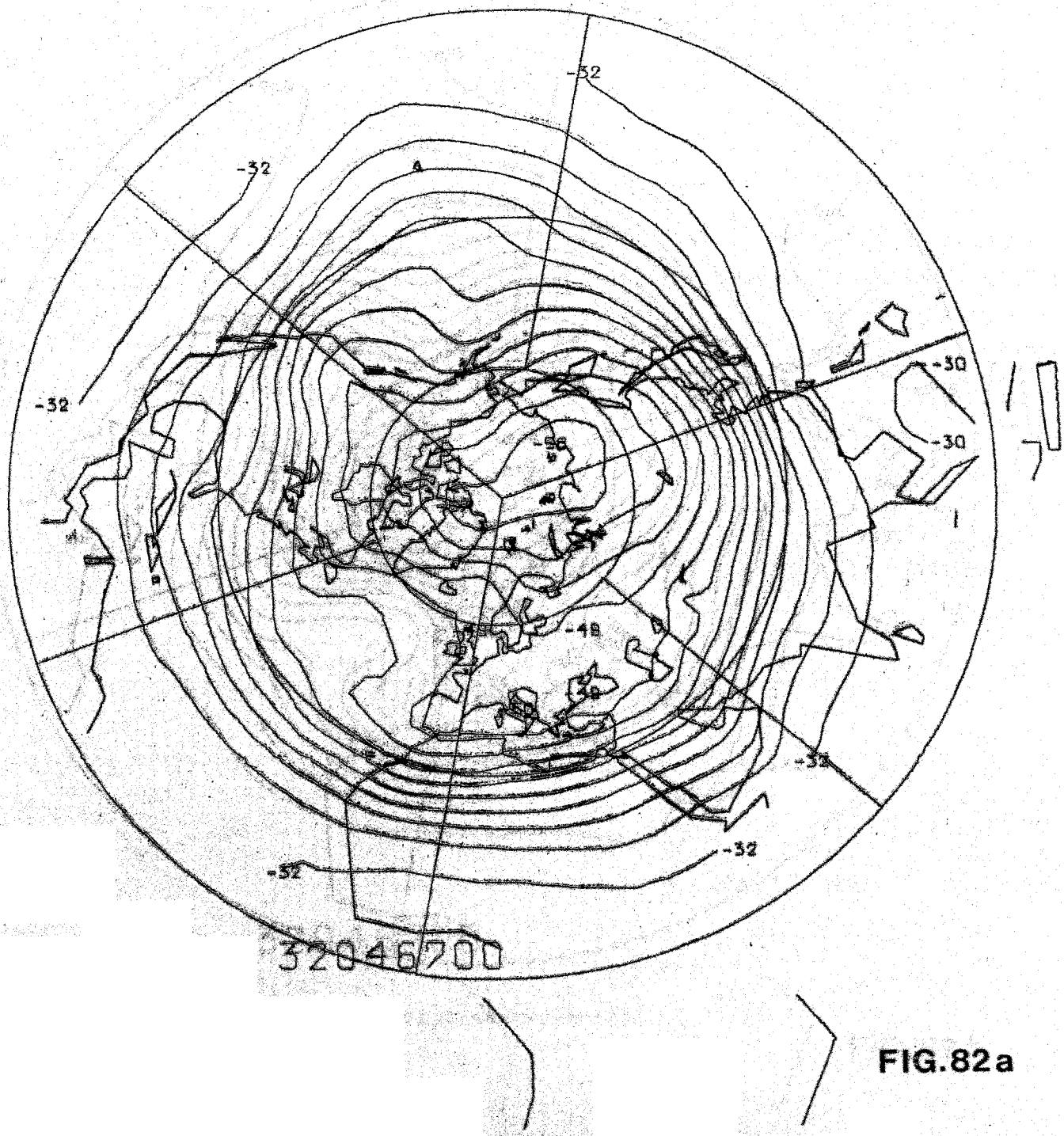


FIG.82a

$[\phi]_{(t)}$ 300mb APRIL 1967

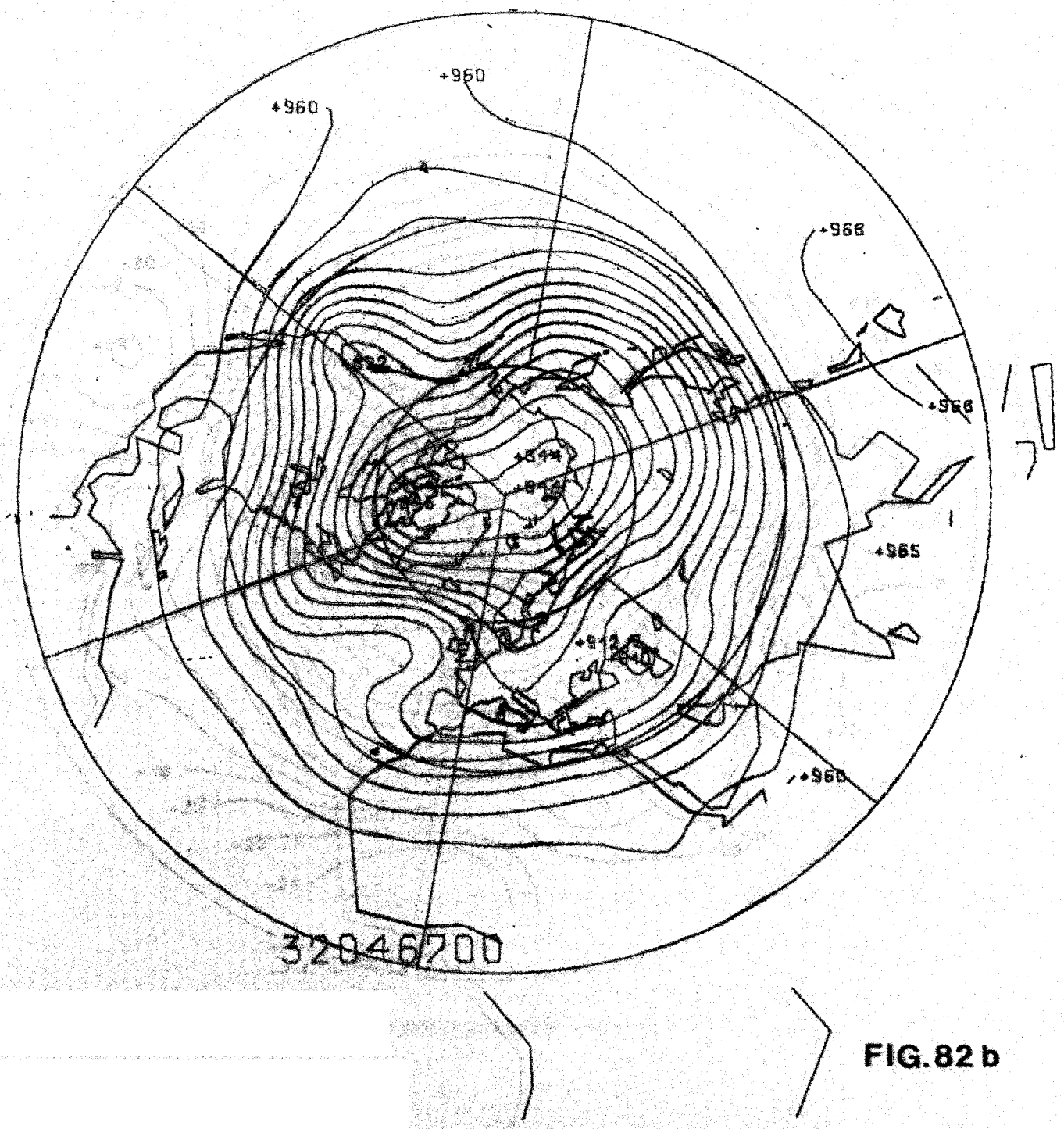


FIG. 82 b

$[T]_{(t)}$ 850 mb APRIL 1968

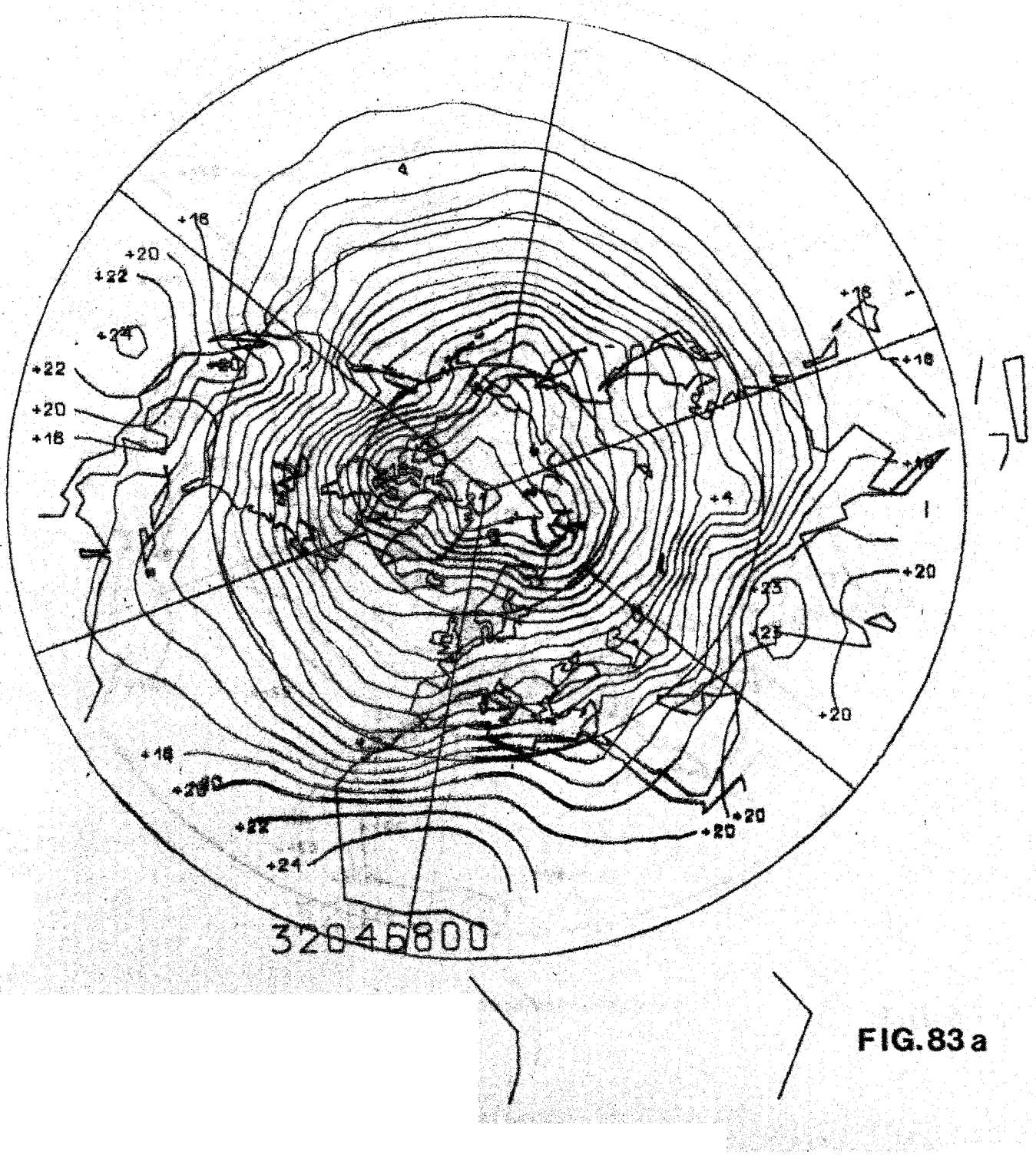


FIG. 83 a

$[\phi]_{(t)}$ 850mb APRIL 1968

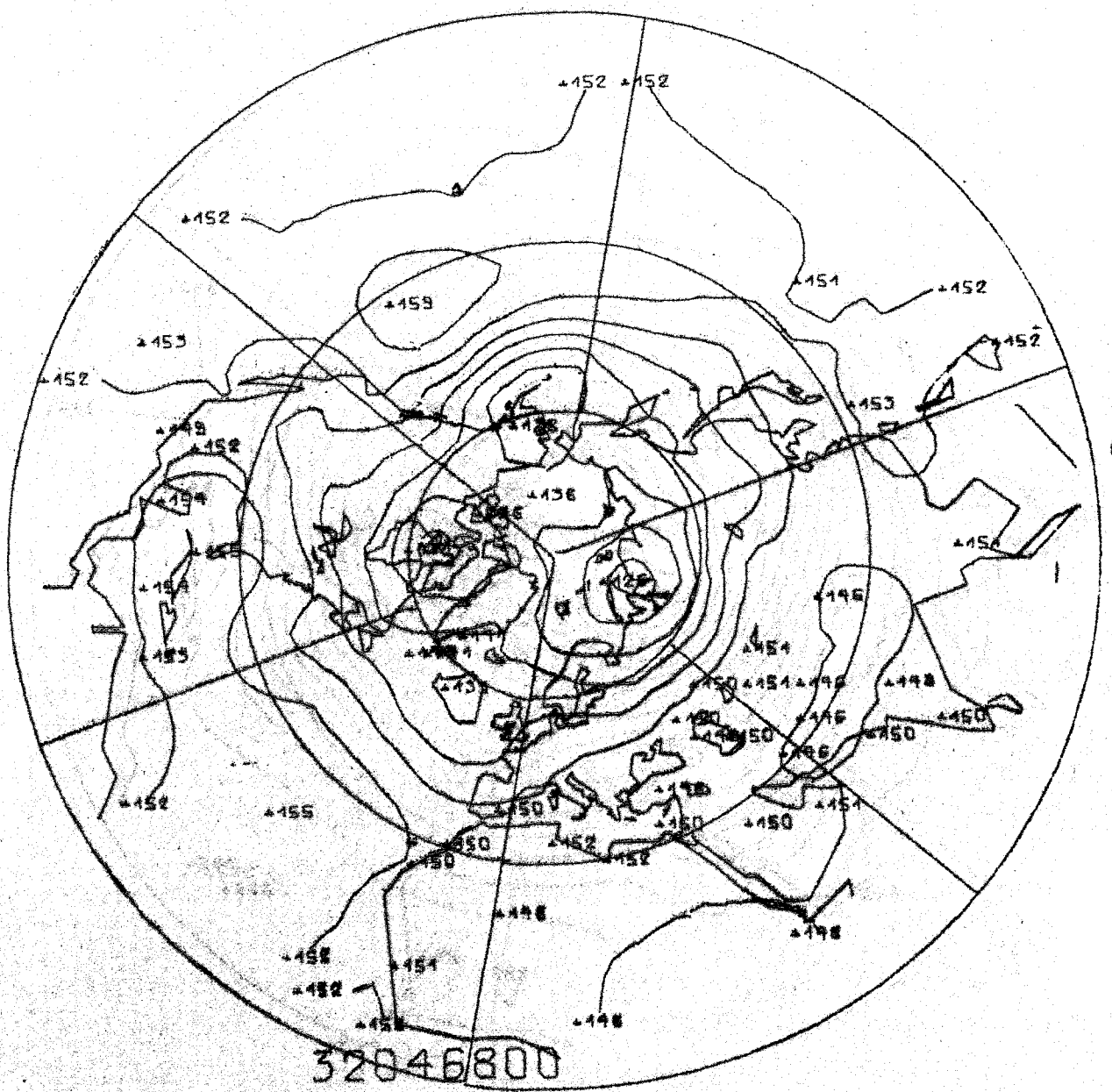


FIG. 83 b

$[\phi]_{(t)}$ 500mb APRIL 1968

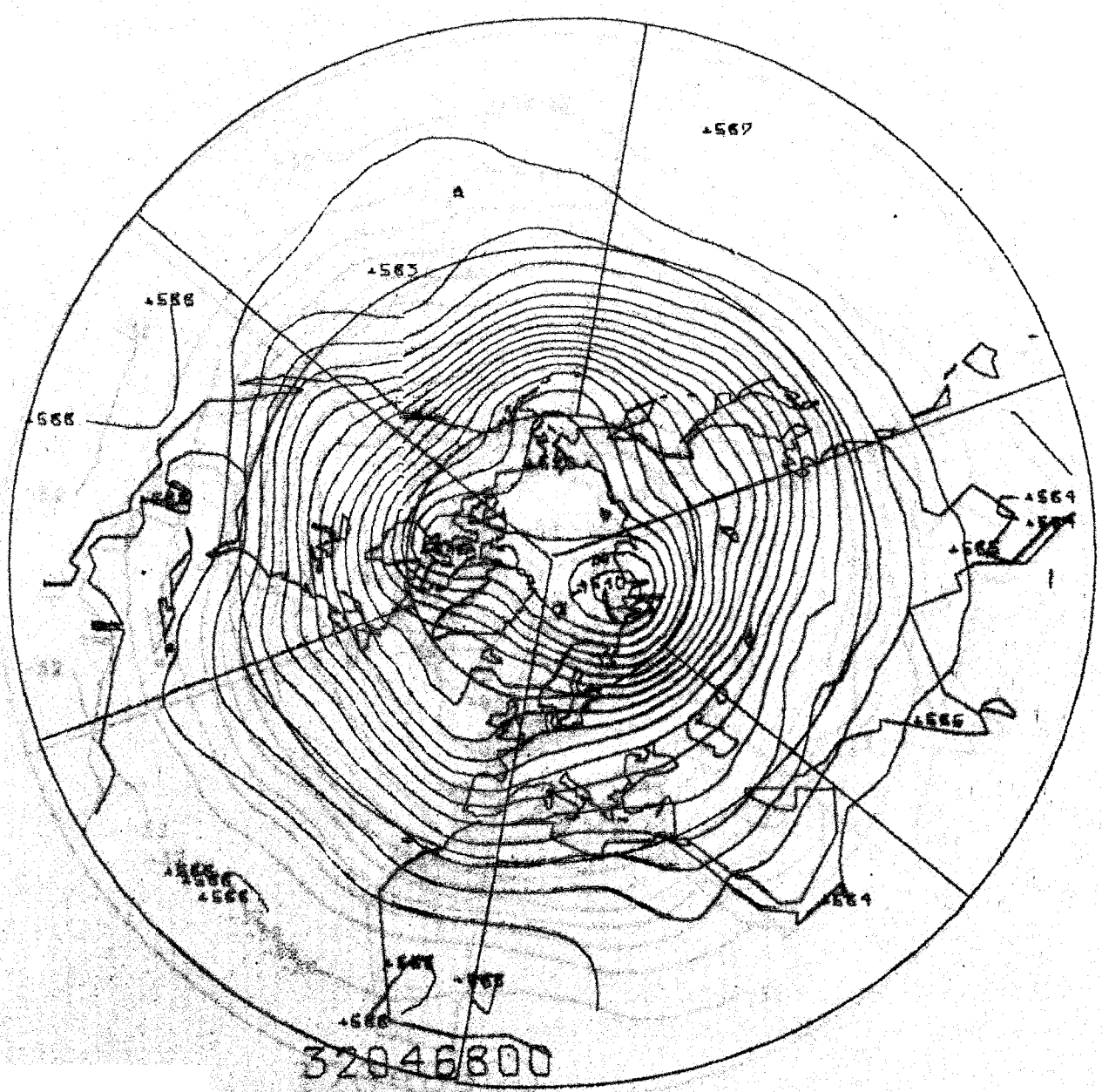
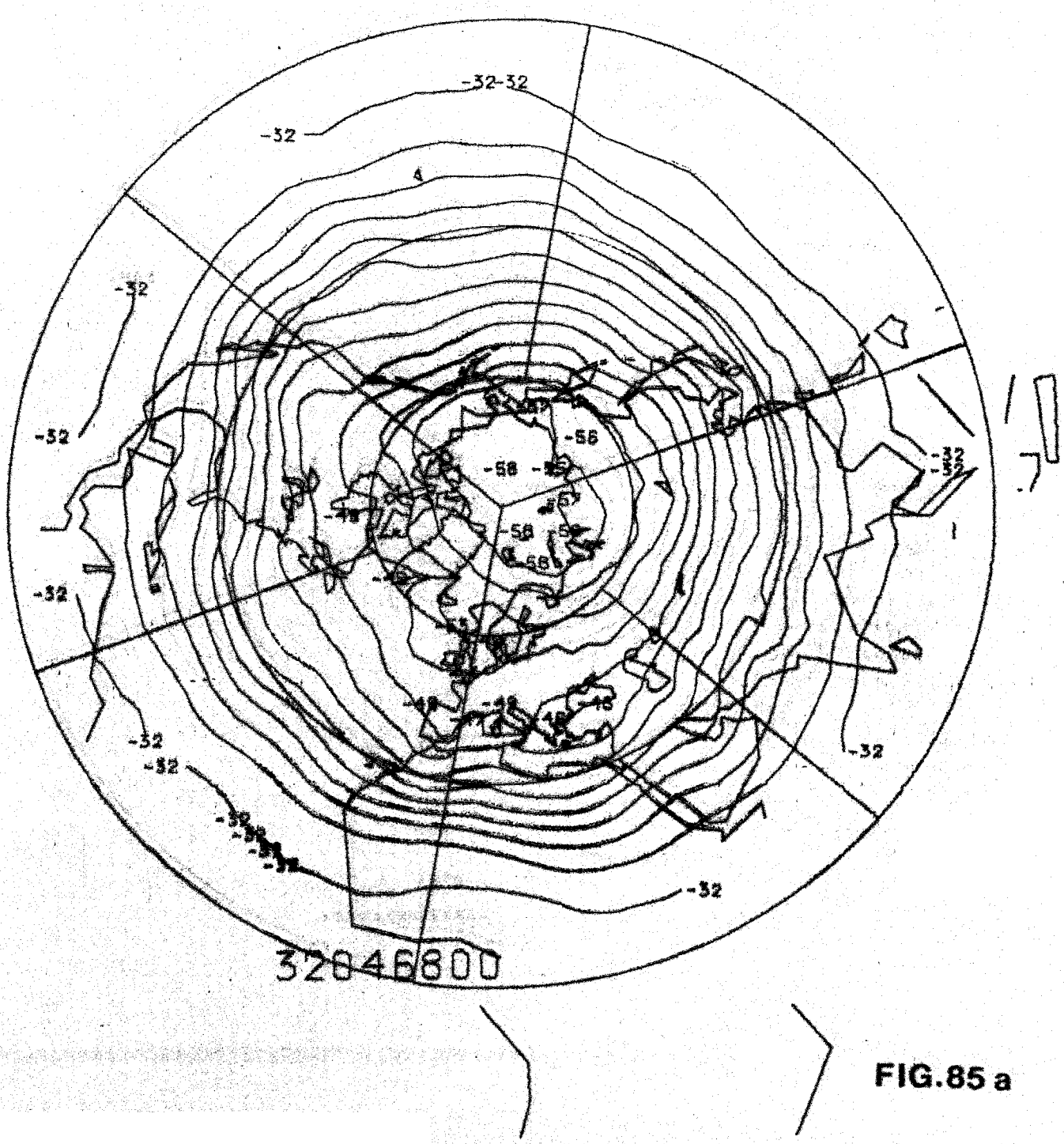


FIG. 84

$[T]_{(t)}$ 300mb APRIL 1968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$[\phi]_{(t)}$ 300mb APRIL 1968

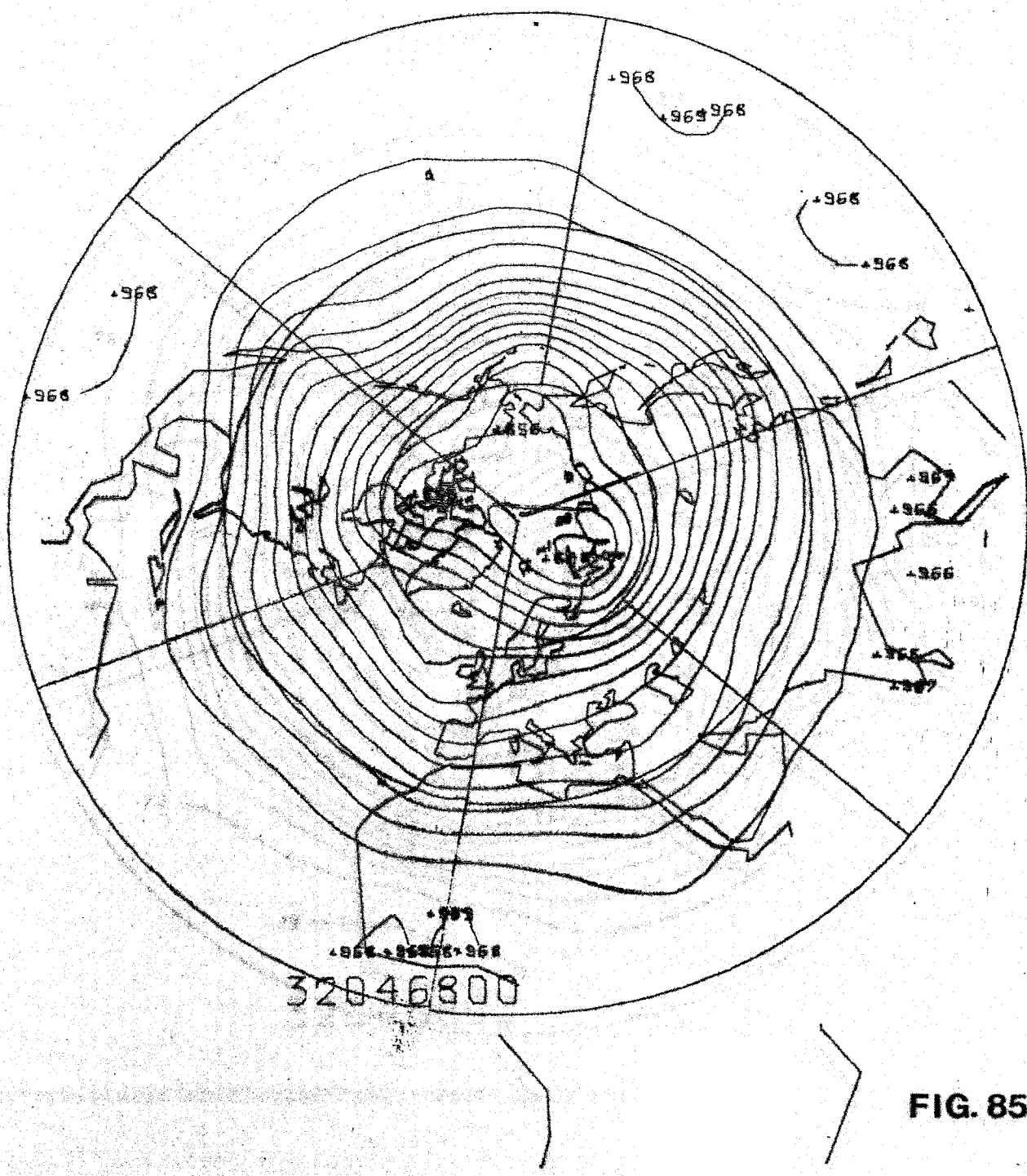


FIG. 85 b

$[T]_{(t)}$ 100 mb APRIL 1968

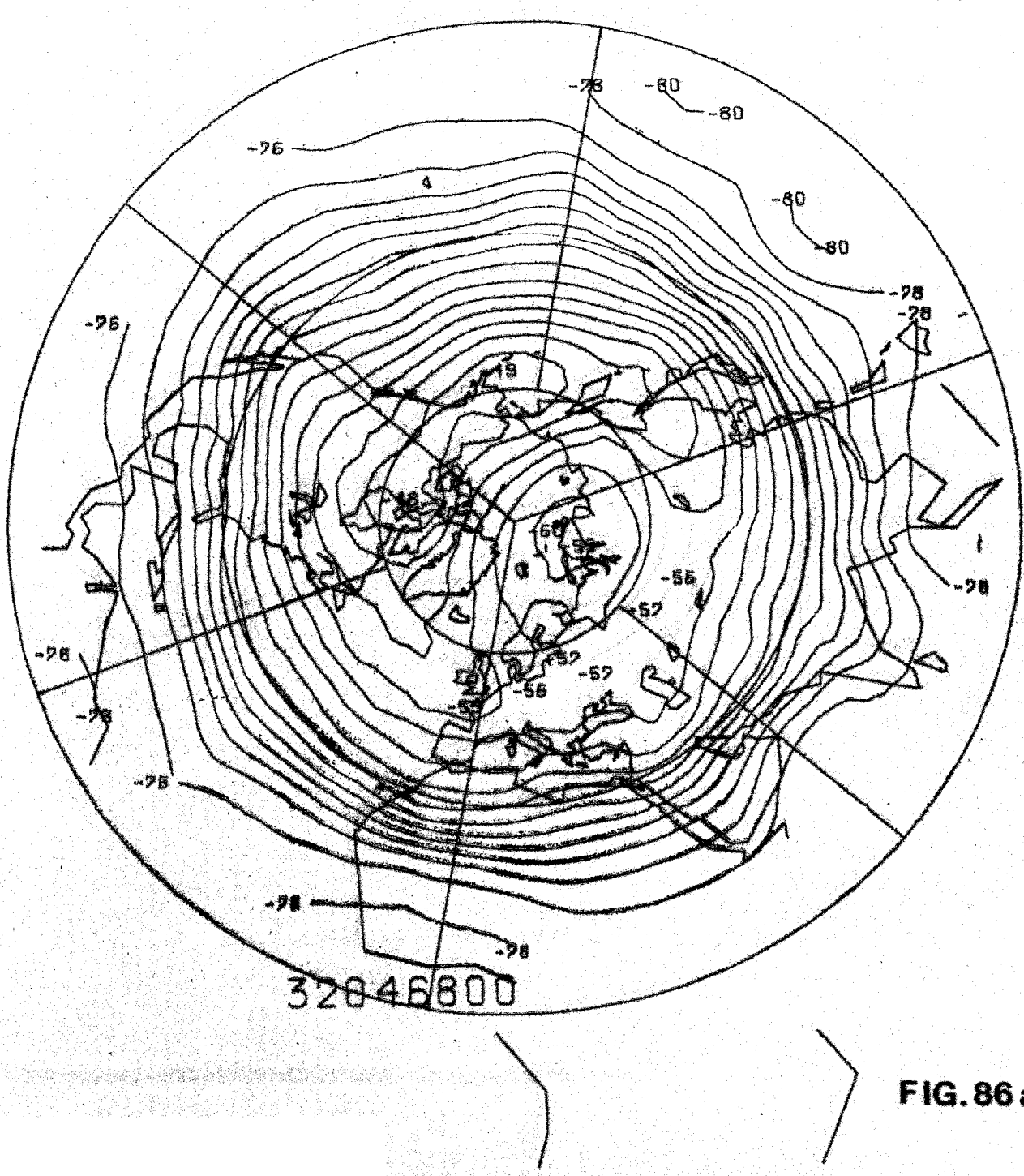


FIG. 86a

$[\phi]_{(t)}$ 100 mb APRIL 1968

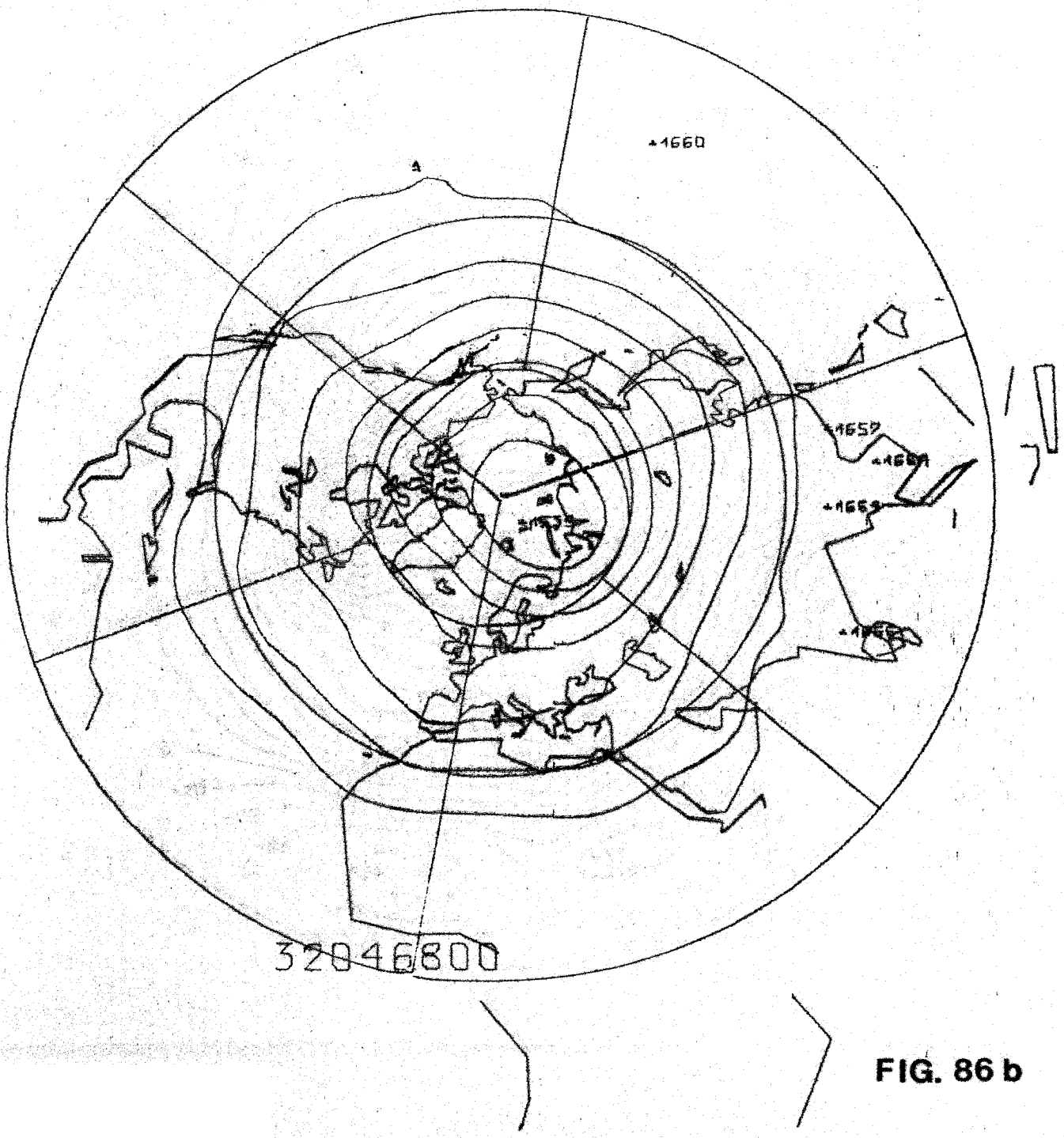


FIG. 86 b

$[T]_{(t)}$ 850mb APRIL 1969

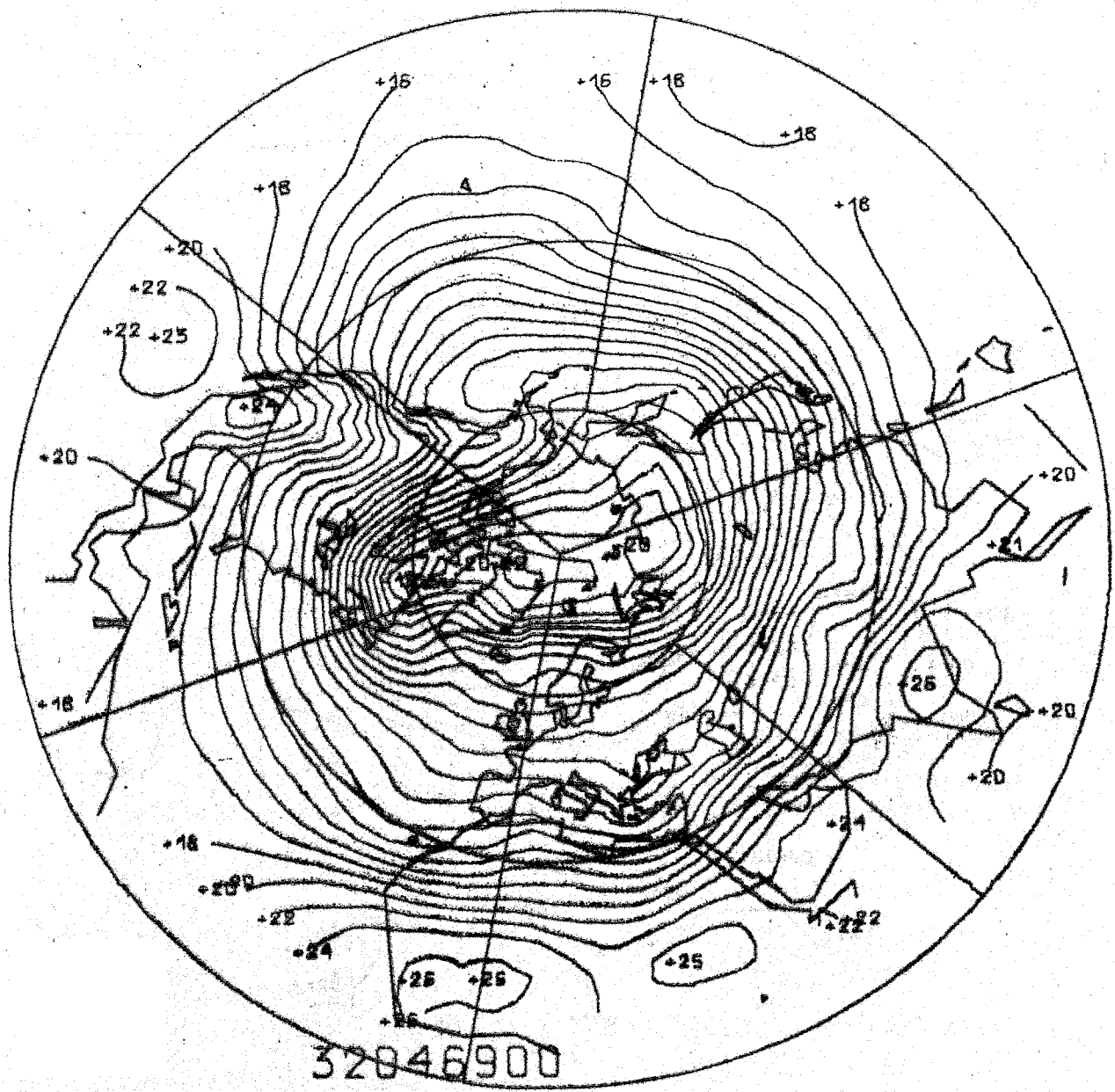


FIG. 87 a

$[\phi]_{(t)}$ 850mb APRIL 1969

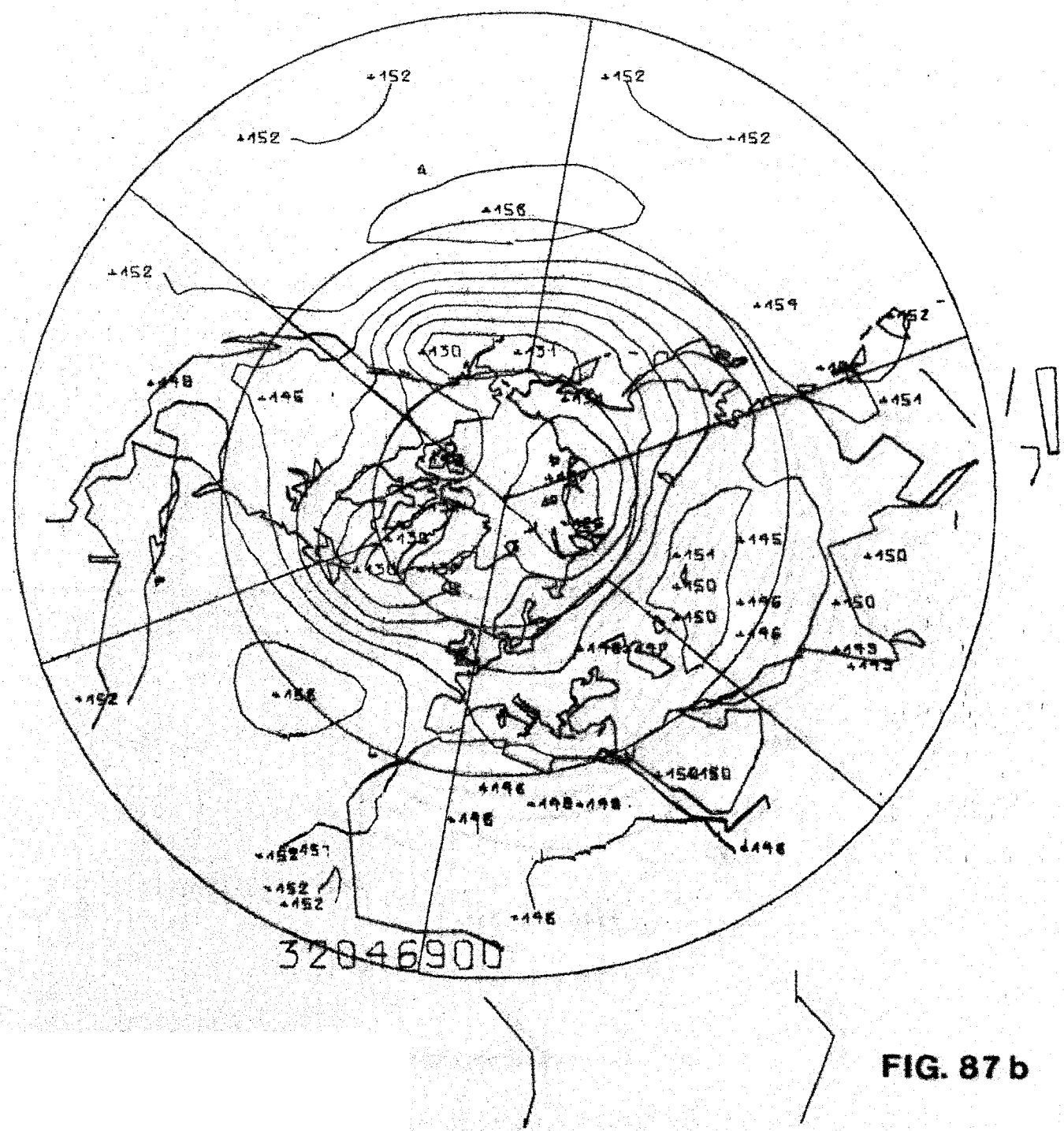


FIG. 87 b

$[\phi]_{(t)}$ 500mb APRIL 1969

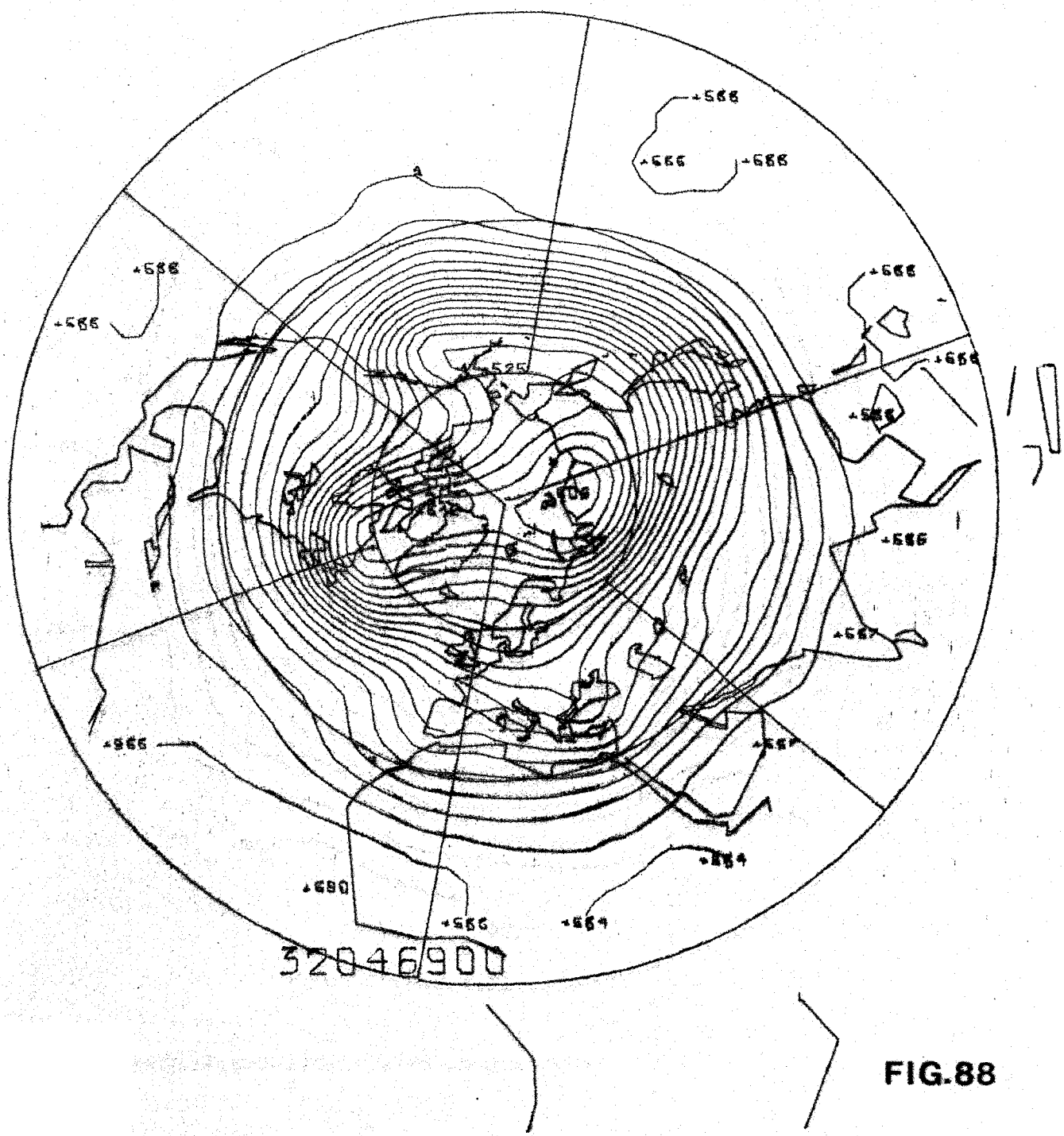


FIG.88

$[T]_{(t)}$ 300mb APRIL 1969

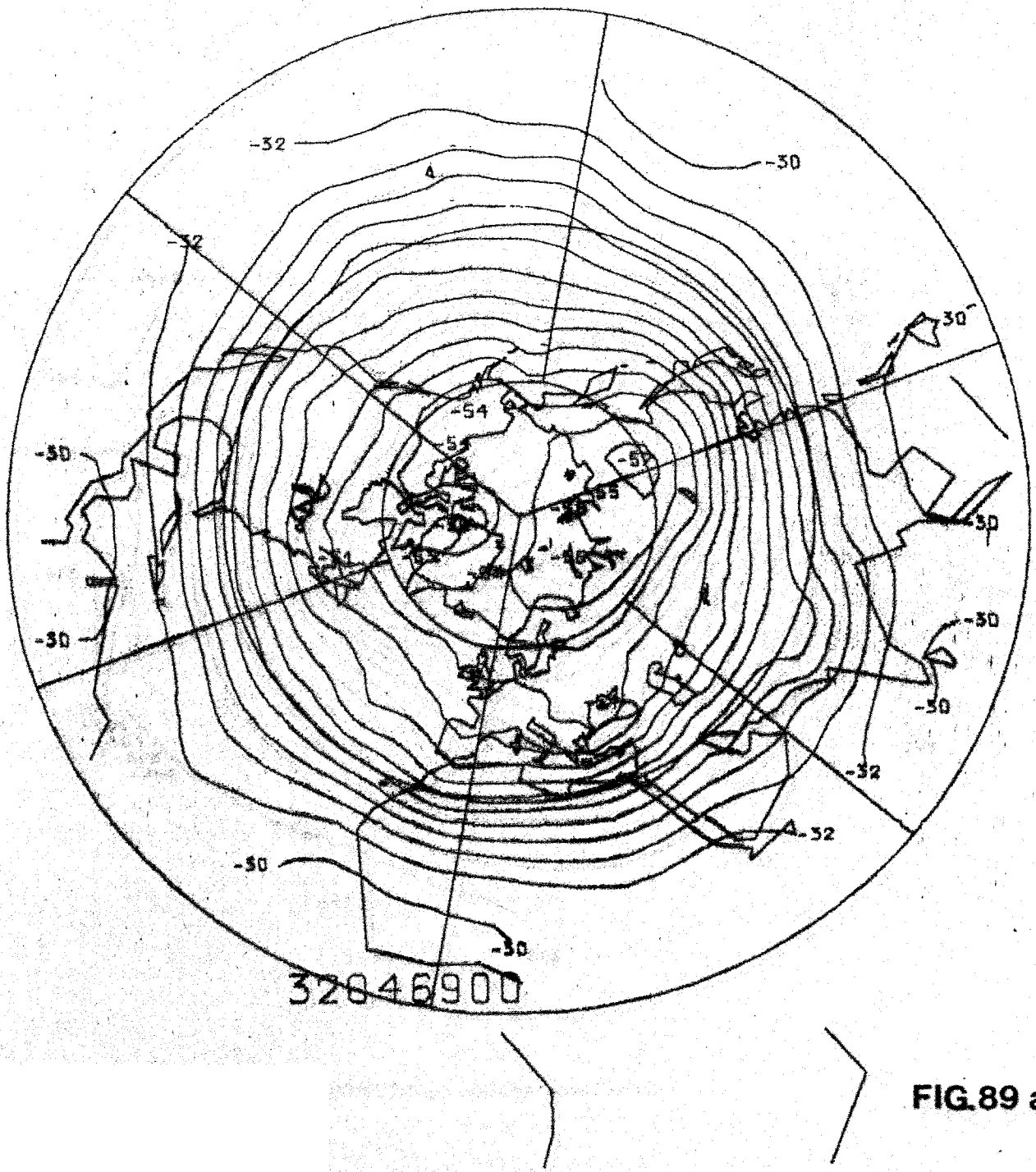


FIG. 89 a

$[\phi]_{(t)}$ 300mb APRIL 1969

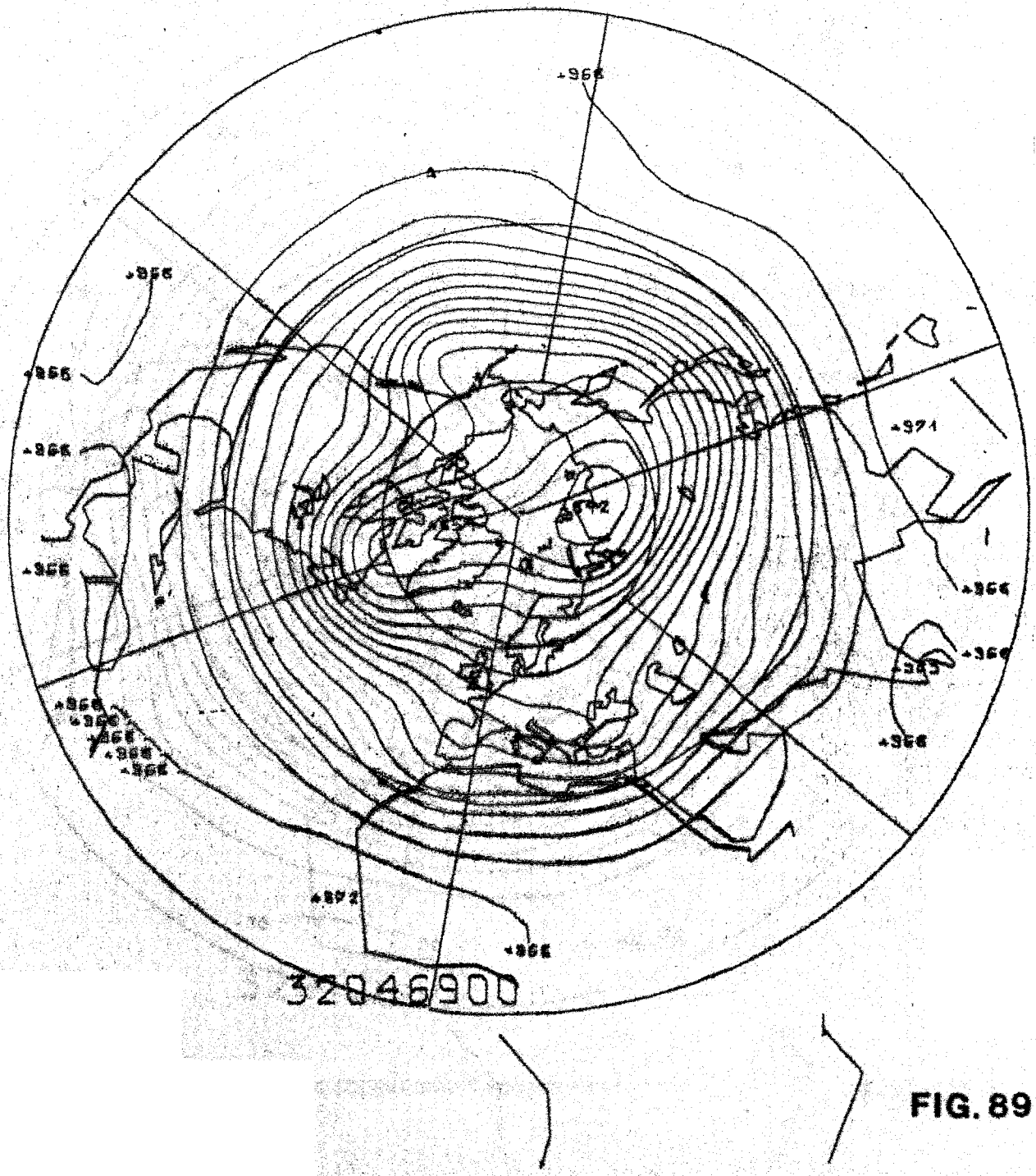


FIG. 89 b

$[T]_{(t)}$ 100mb APRIL 1969

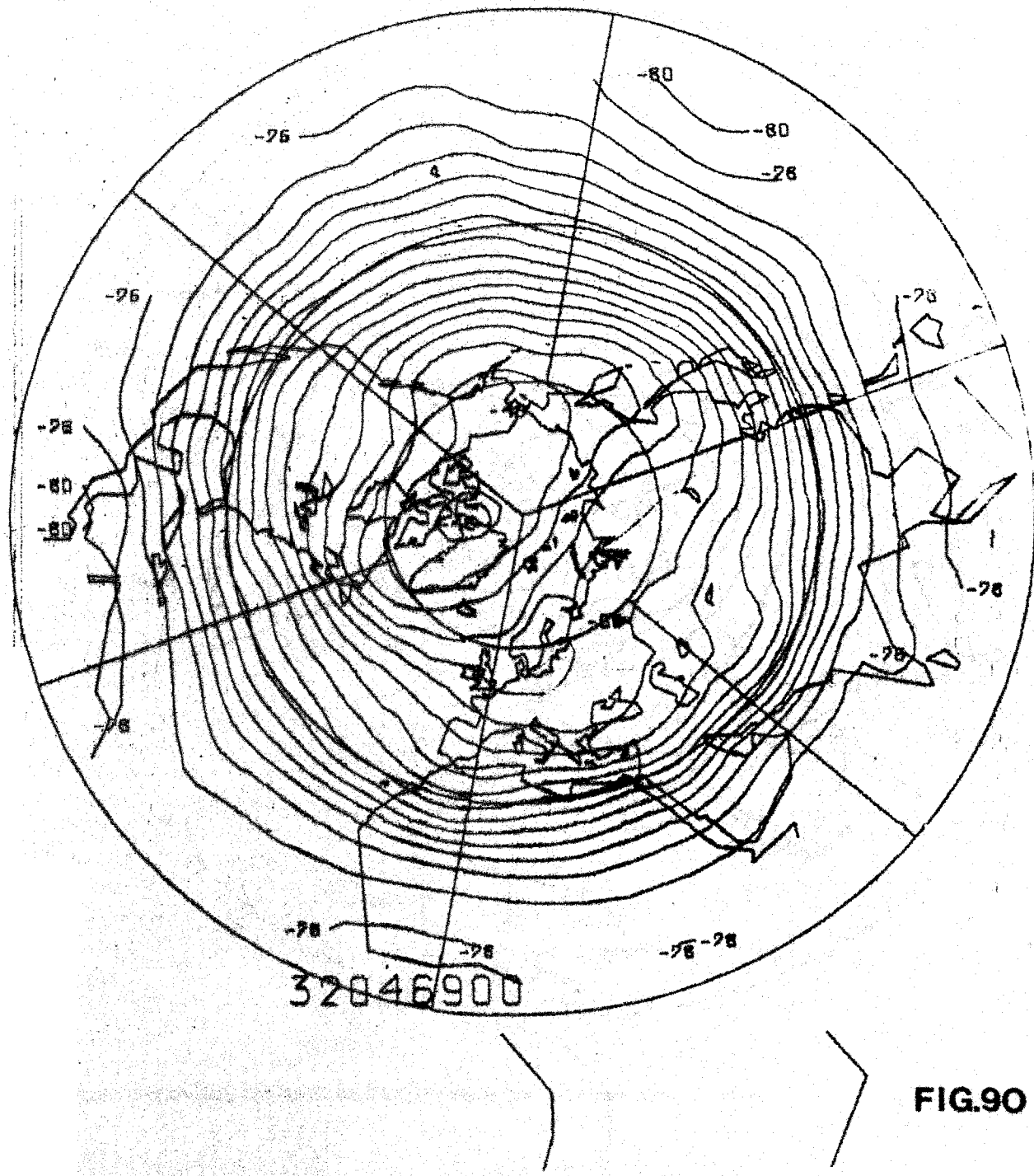


FIG.90 a

$[\phi]_{(t)}$ 100mb APRIL 1969

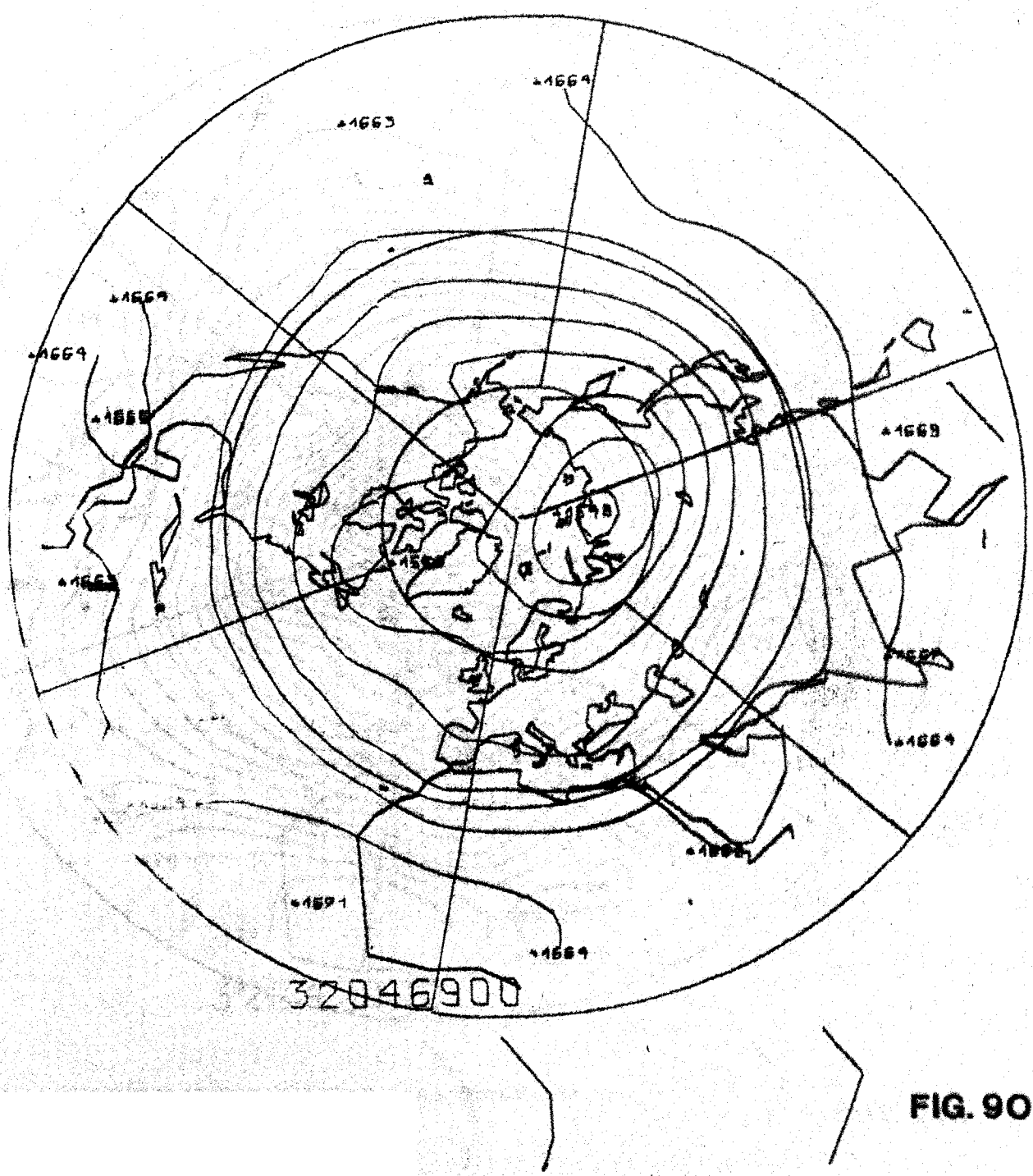


FIG. 90 b

$[T]_{(t)}$ 850mb APRIL 1970

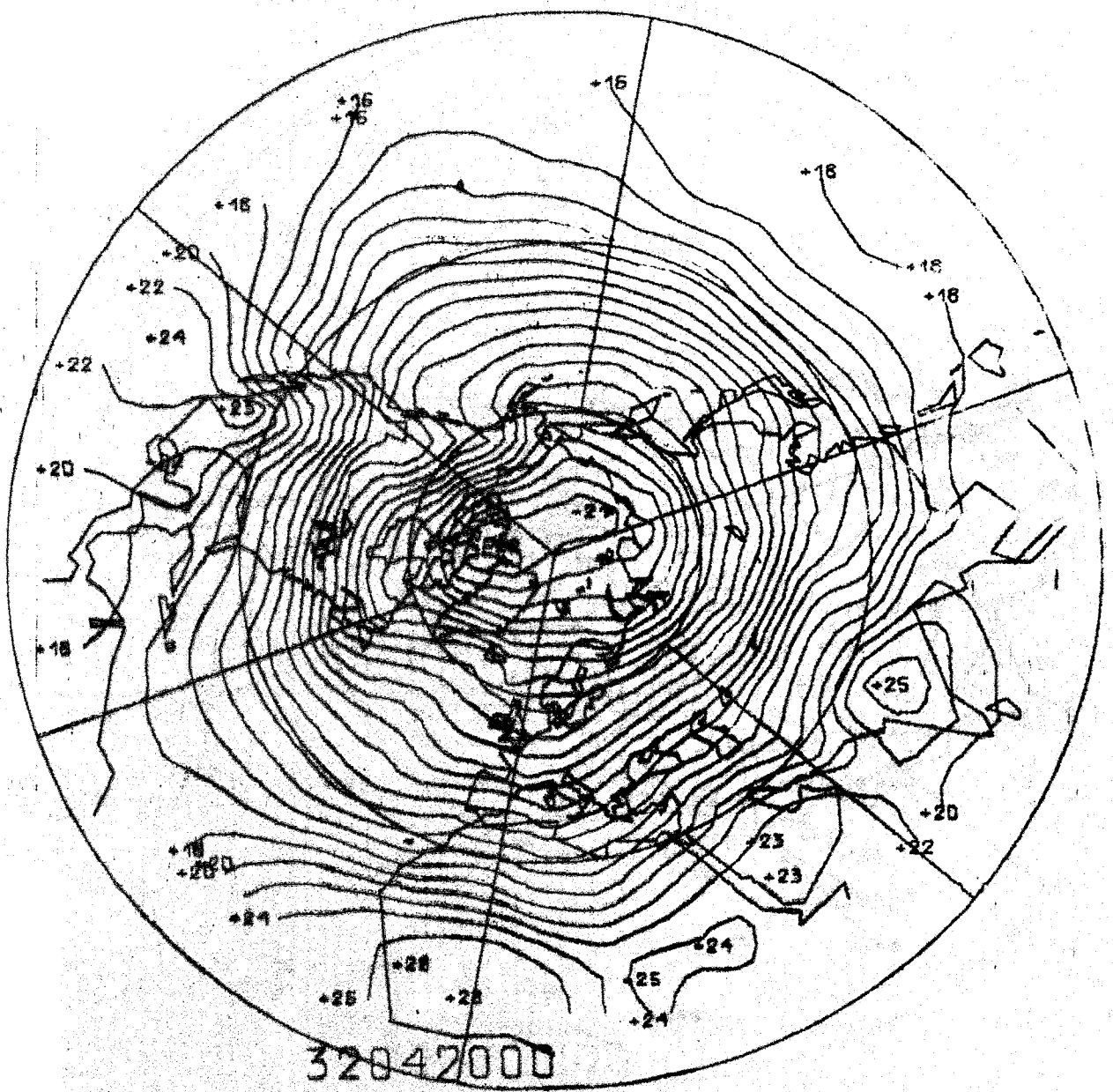


FIG. 91a

$[\phi]_{(t)}$ 850mb APRIL 1970

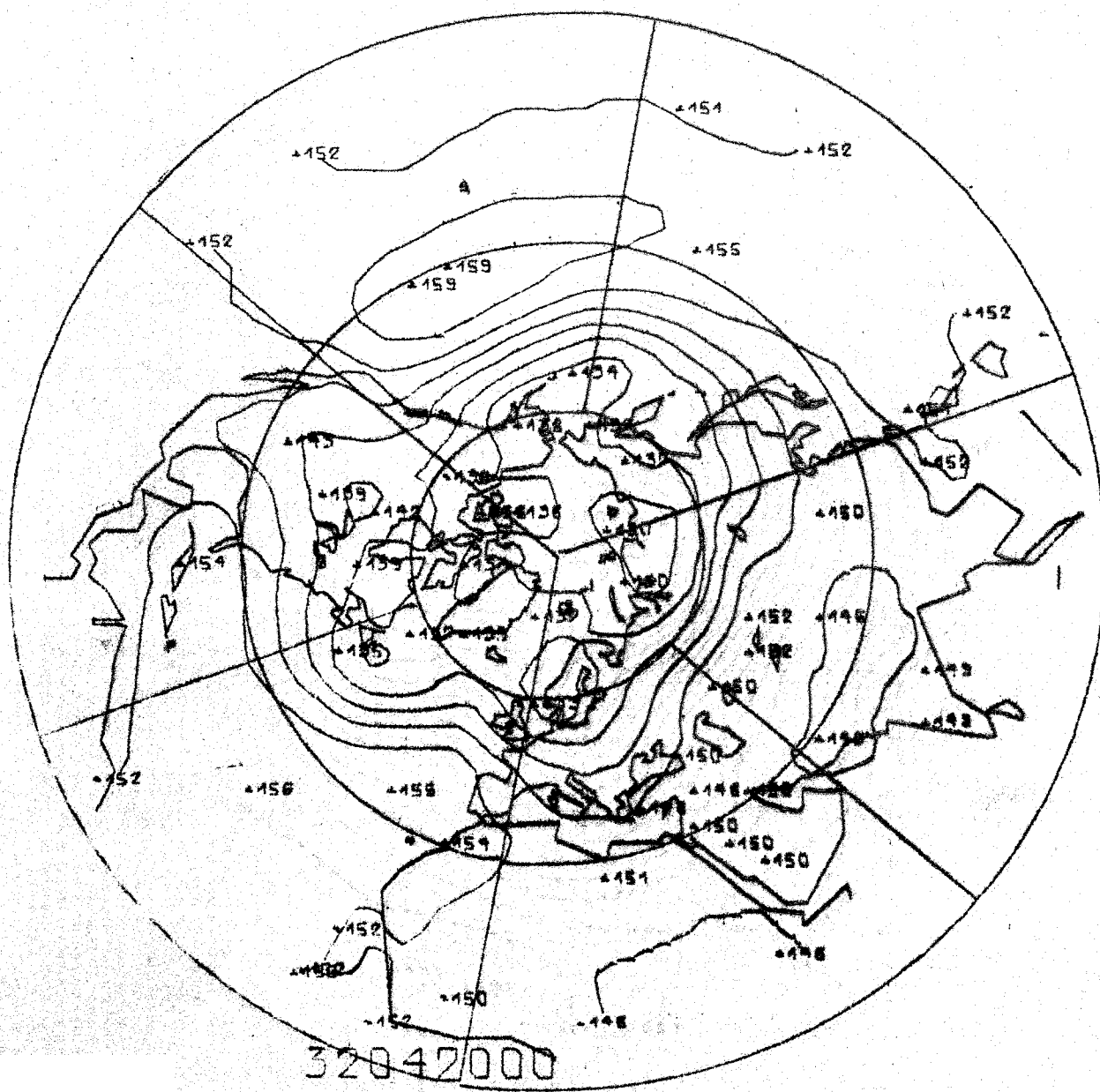


FIG. 91 b

$[\phi]_{(t)}$ 500mb APRIL 1970

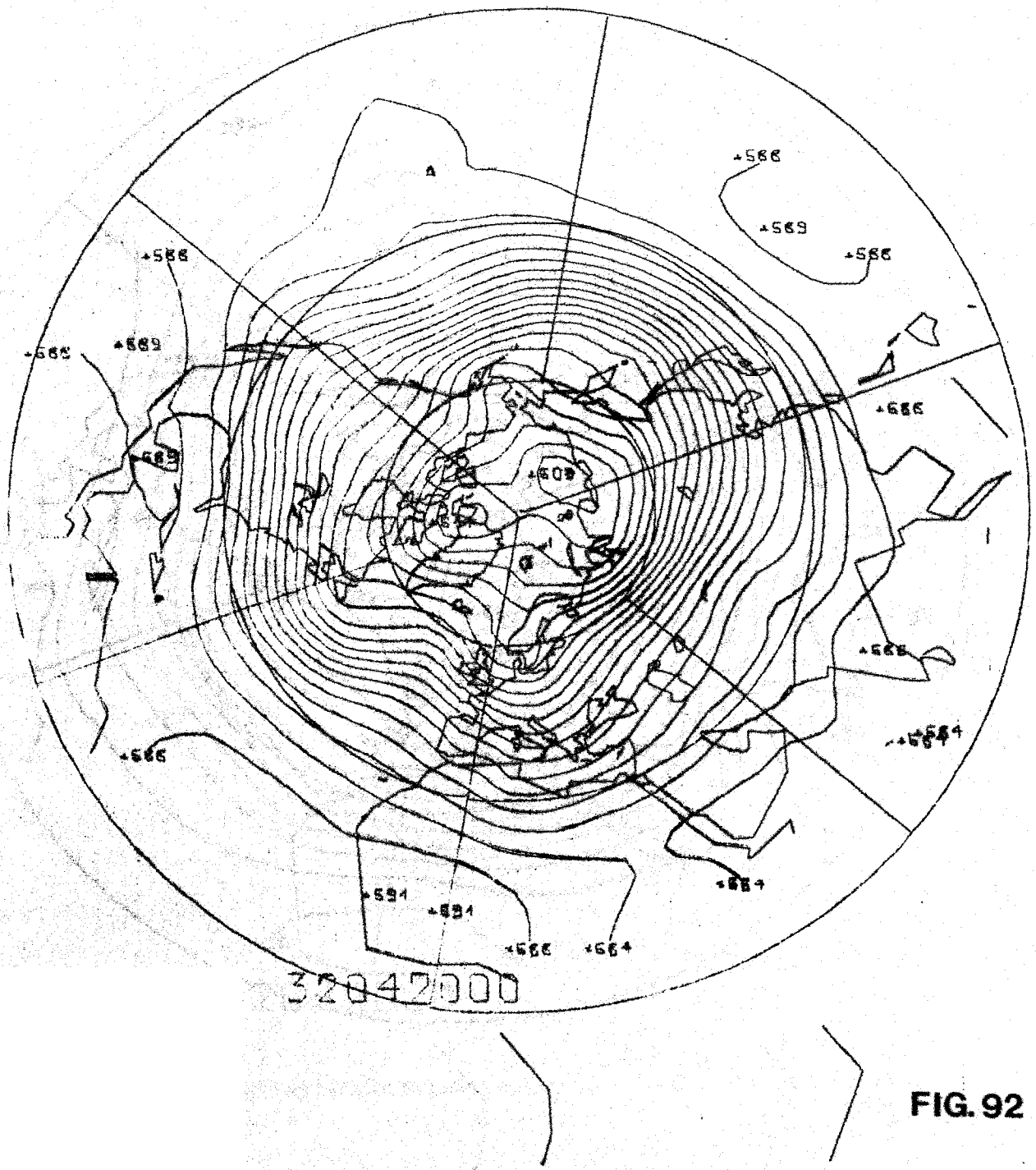


FIG. 92

$[T]_{(t)}$ 300mb APRIL 1970

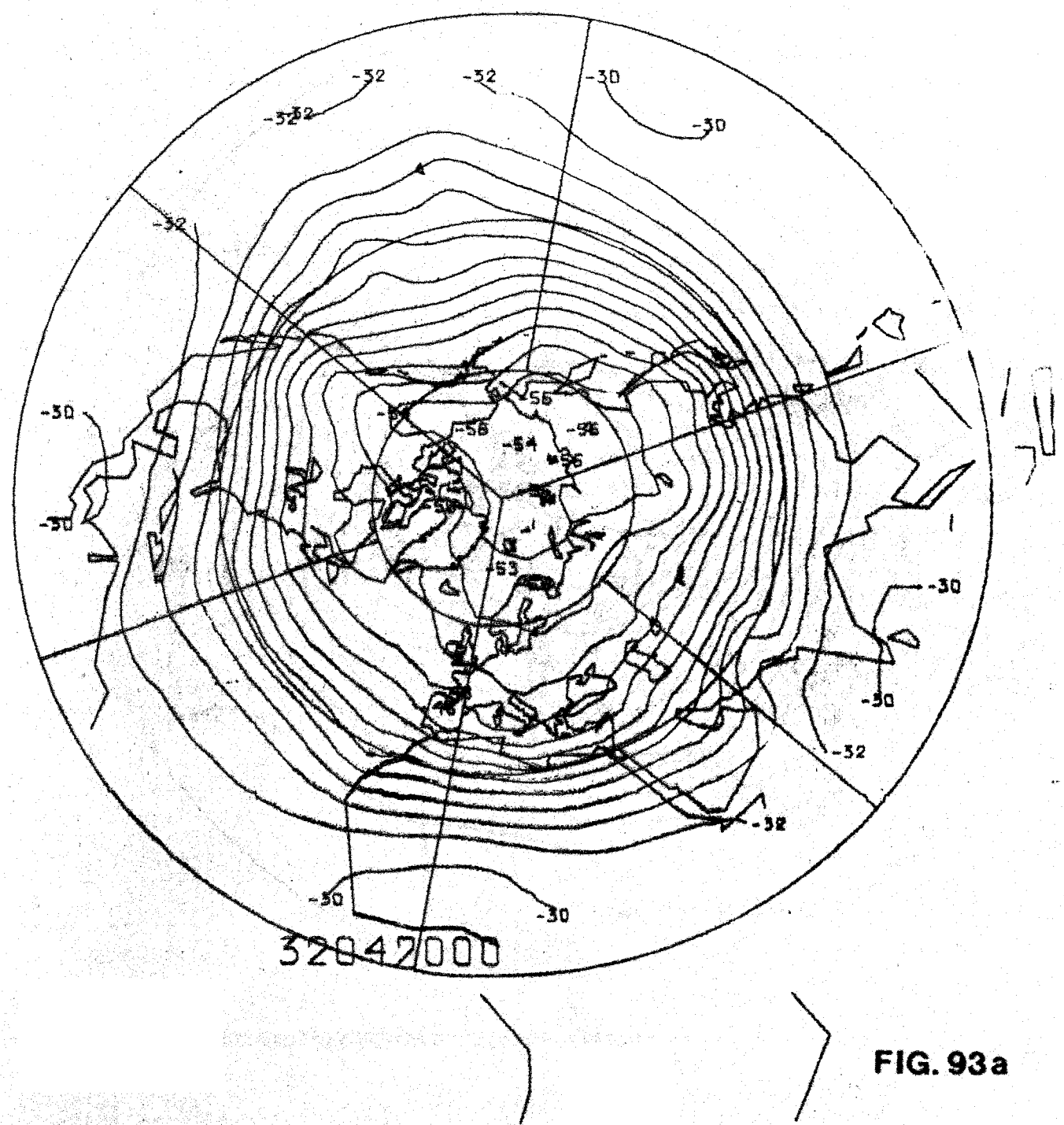


FIG. 93a

$[\phi]_{(t)}$ 300mb APRIL 1970

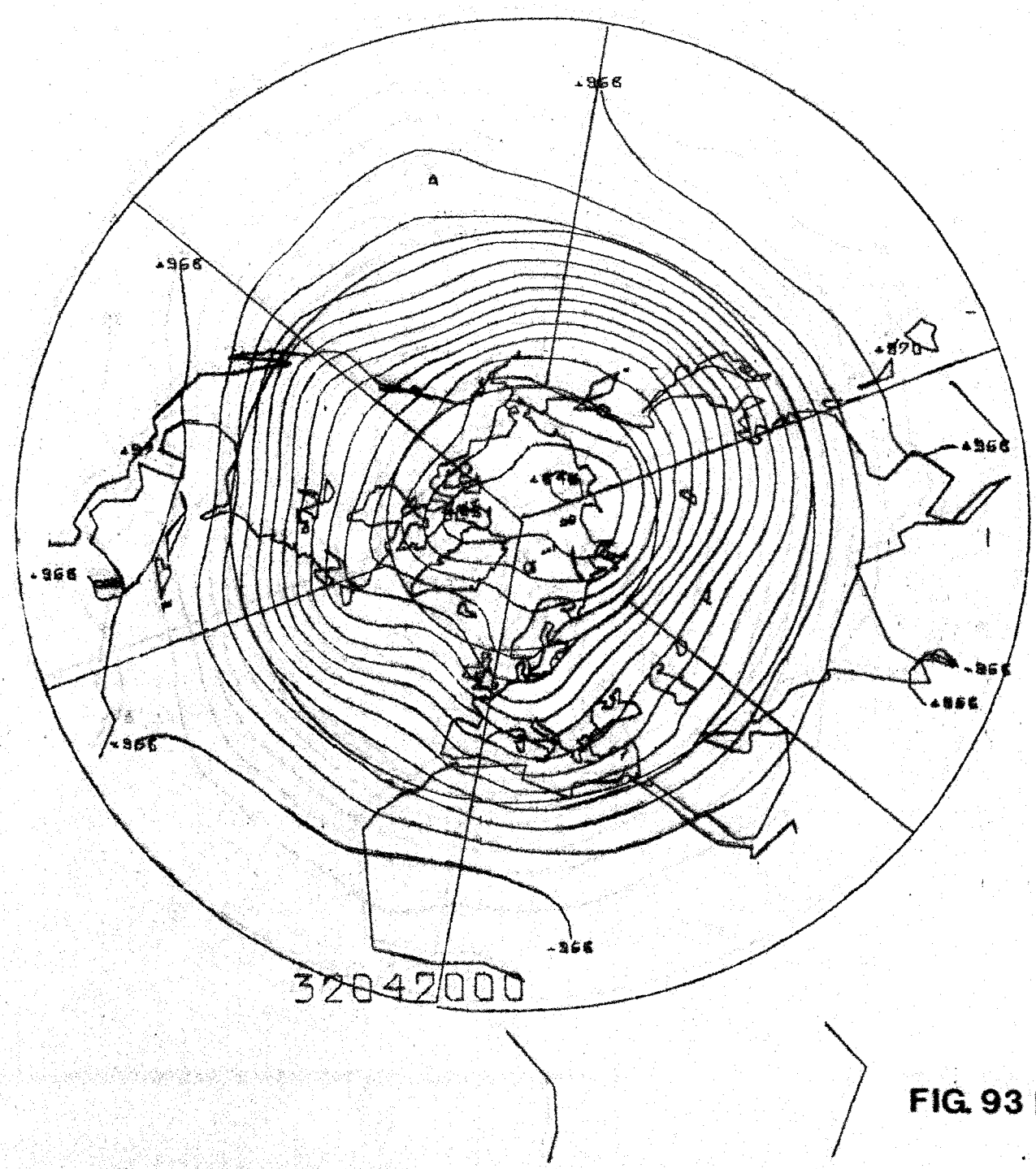
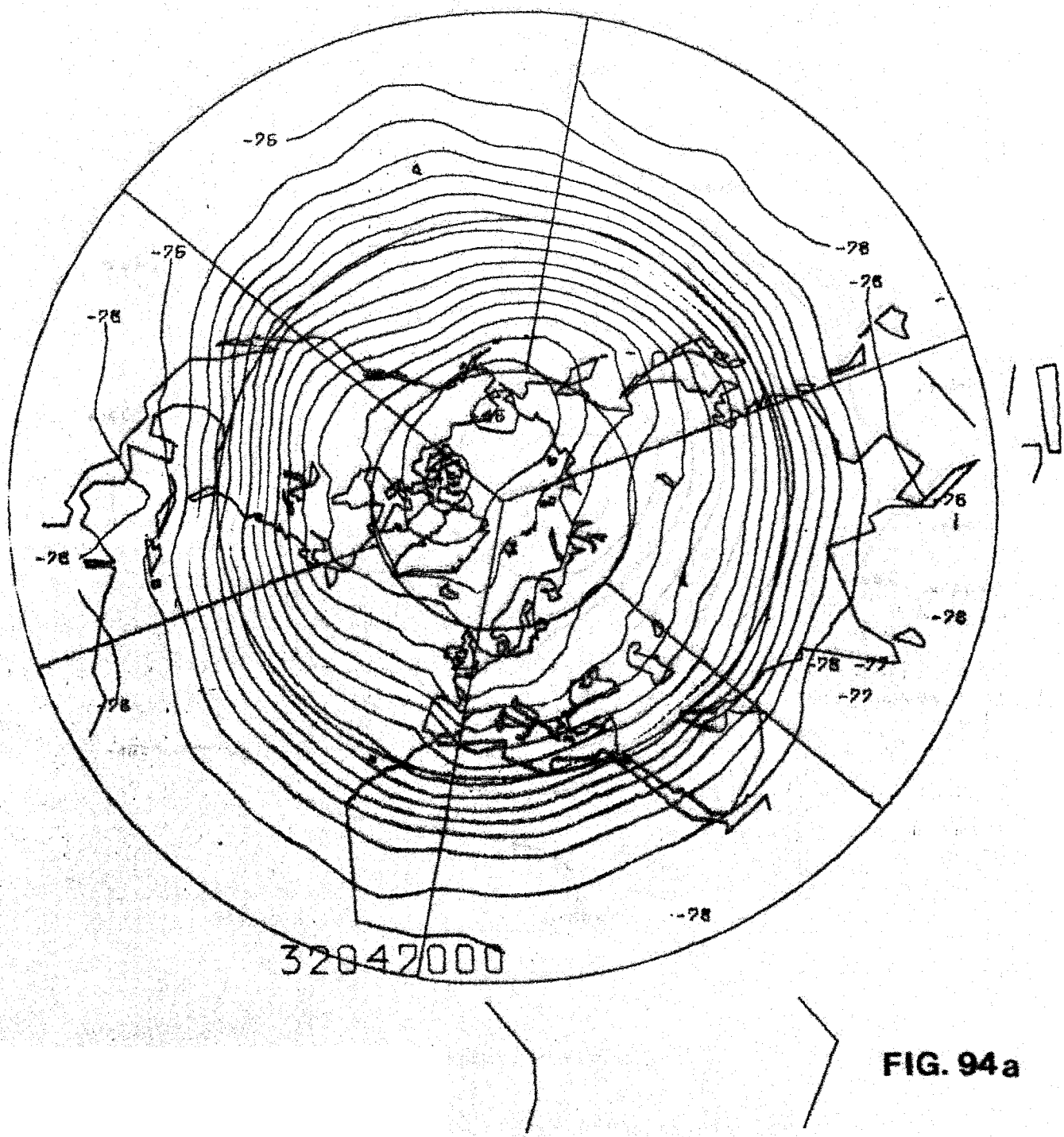


FIG. 93 b

$[T]_{(t)}$ 100mb APRIL 1970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$[\Phi]_{(t)}$ 100mb APRIL 1970

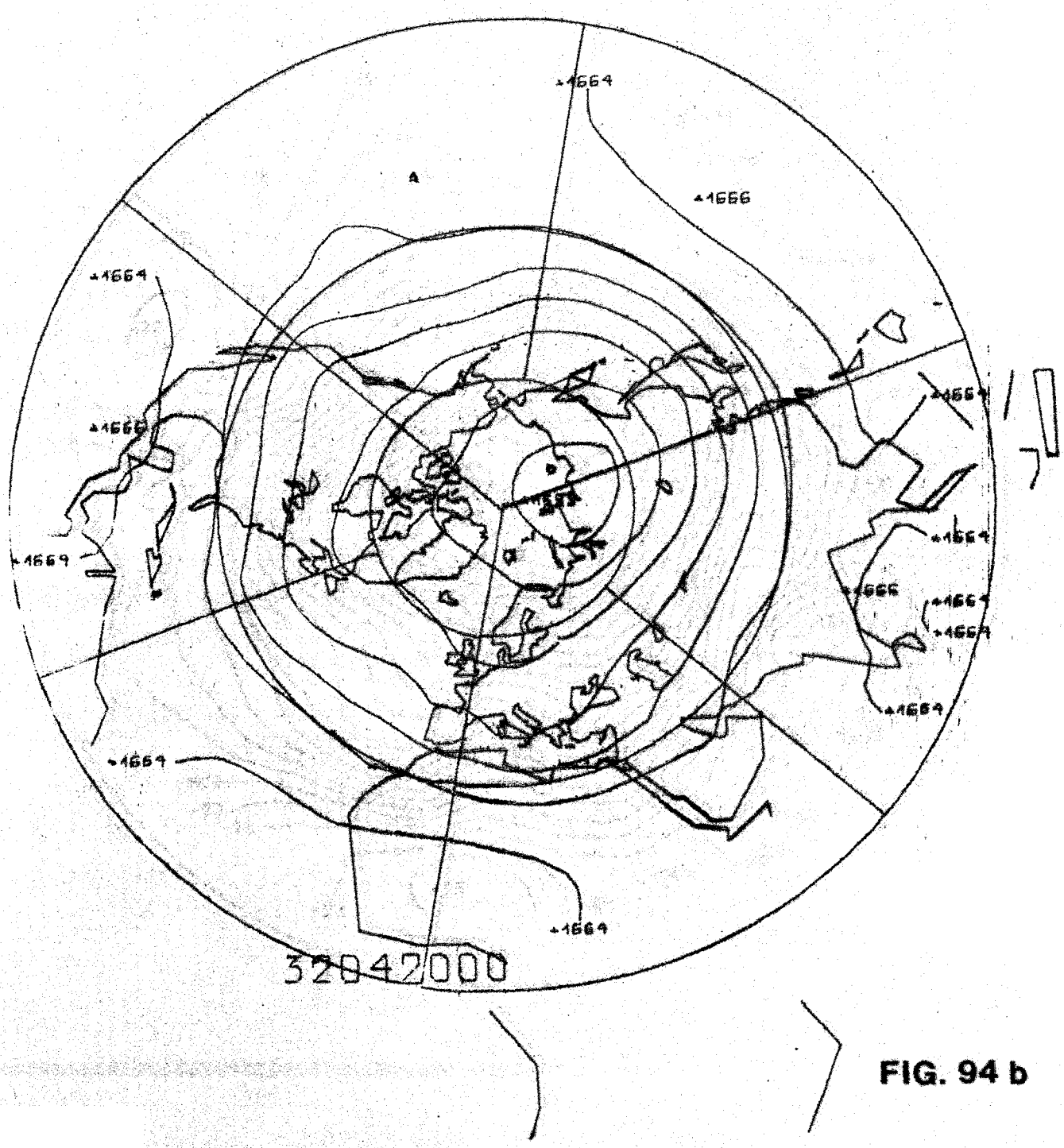

FIG. 94 b

$[T]_{(t)}$ 850 mb APRIL 1971

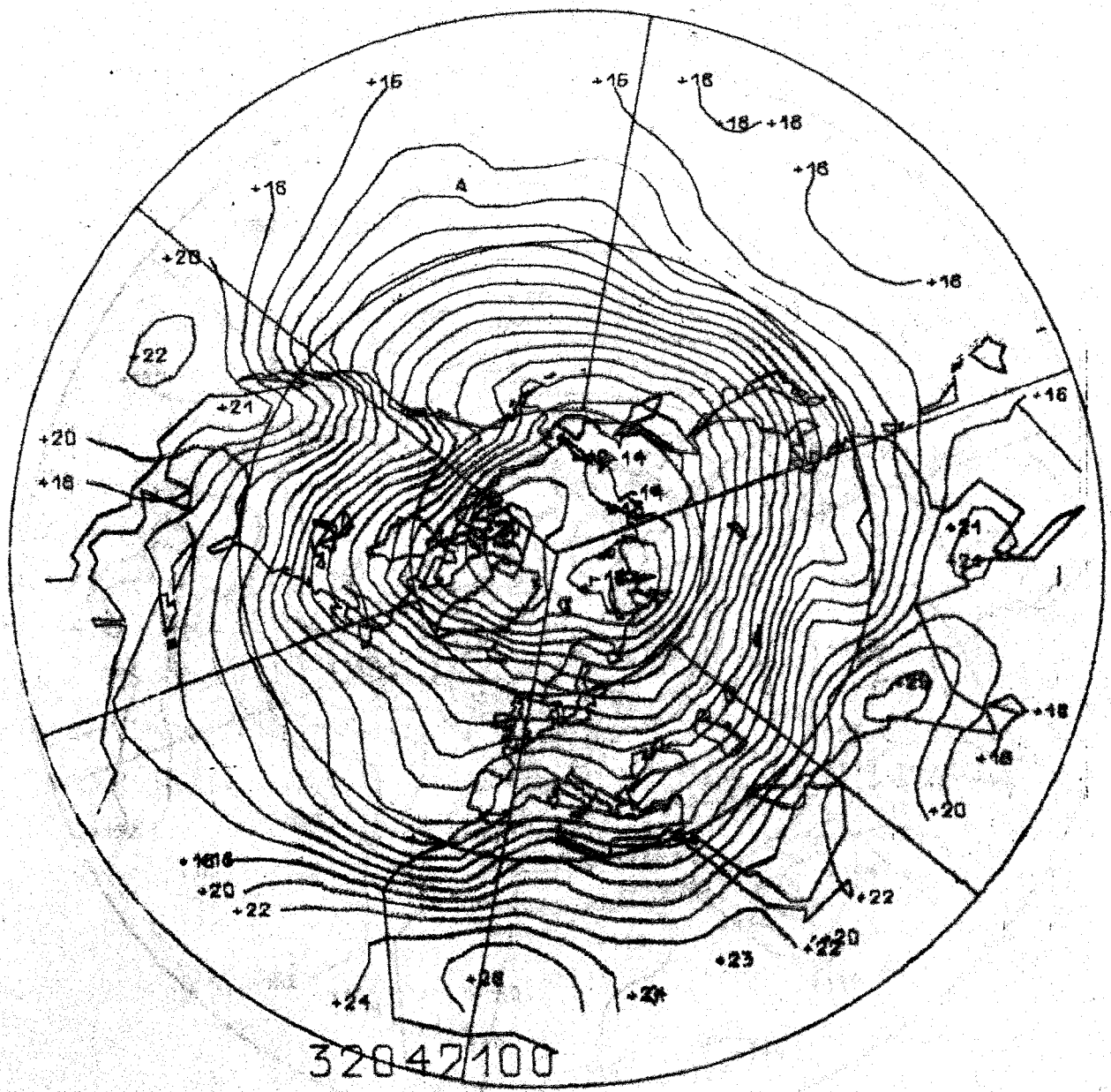

FIG. 95a

$[\Phi]_{(t)}$ 850 mb APRIL 1971

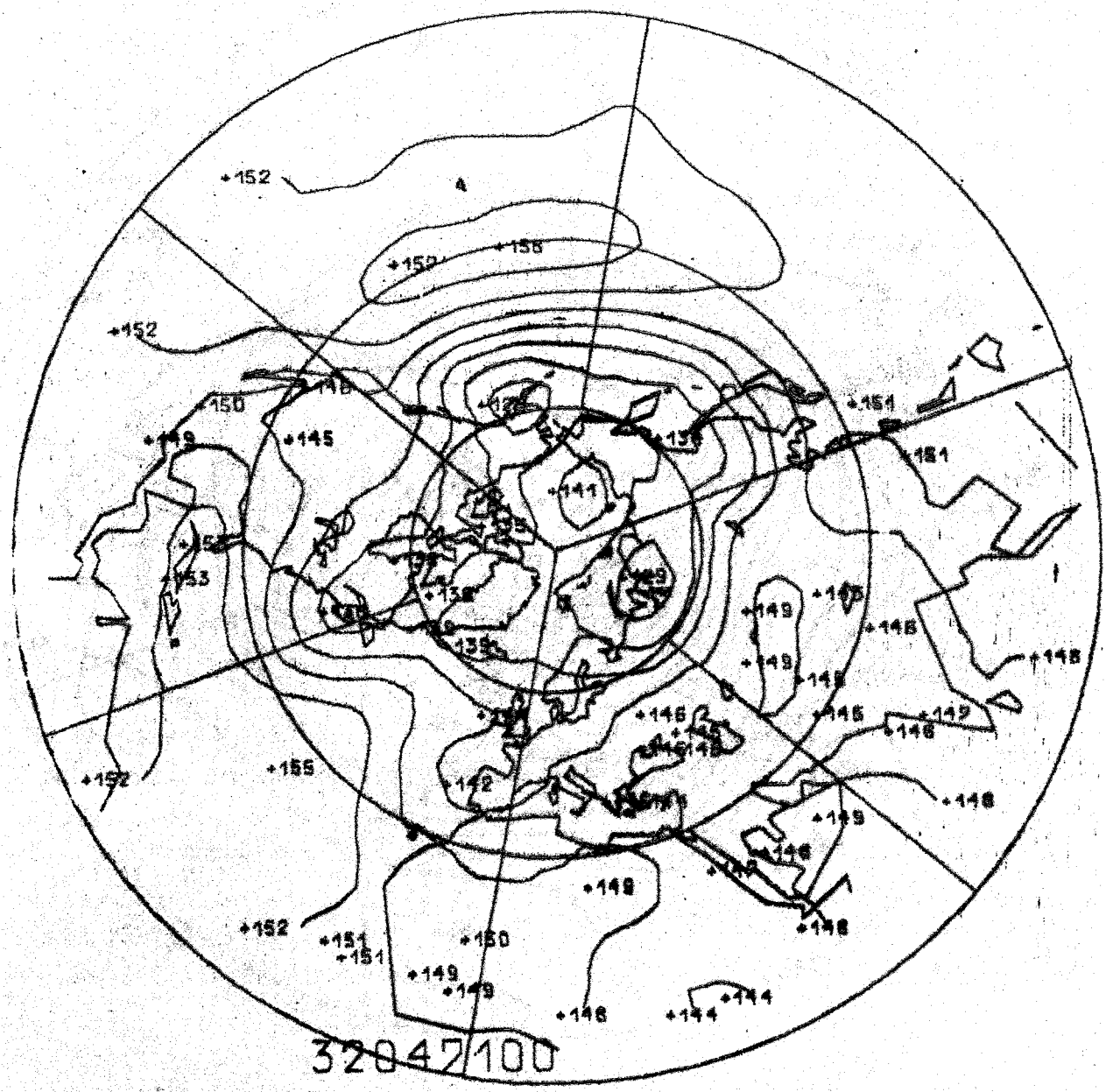

FIG. 95 b

$[\phi]_{(t)}$ 500mb APRIL 1971

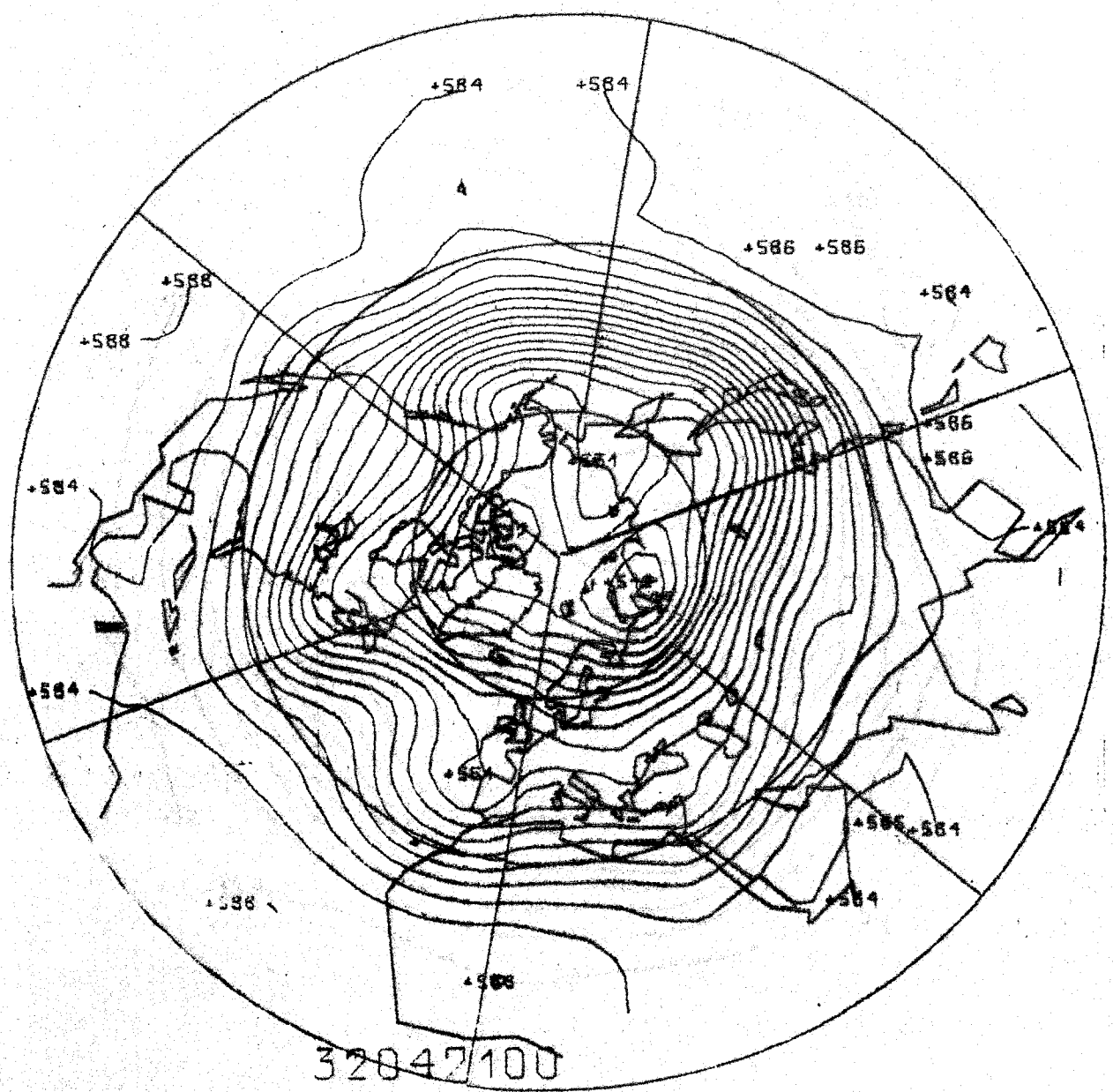

FIG. 96

$[T]_{(t)}$ 300 mb APRIL 1971

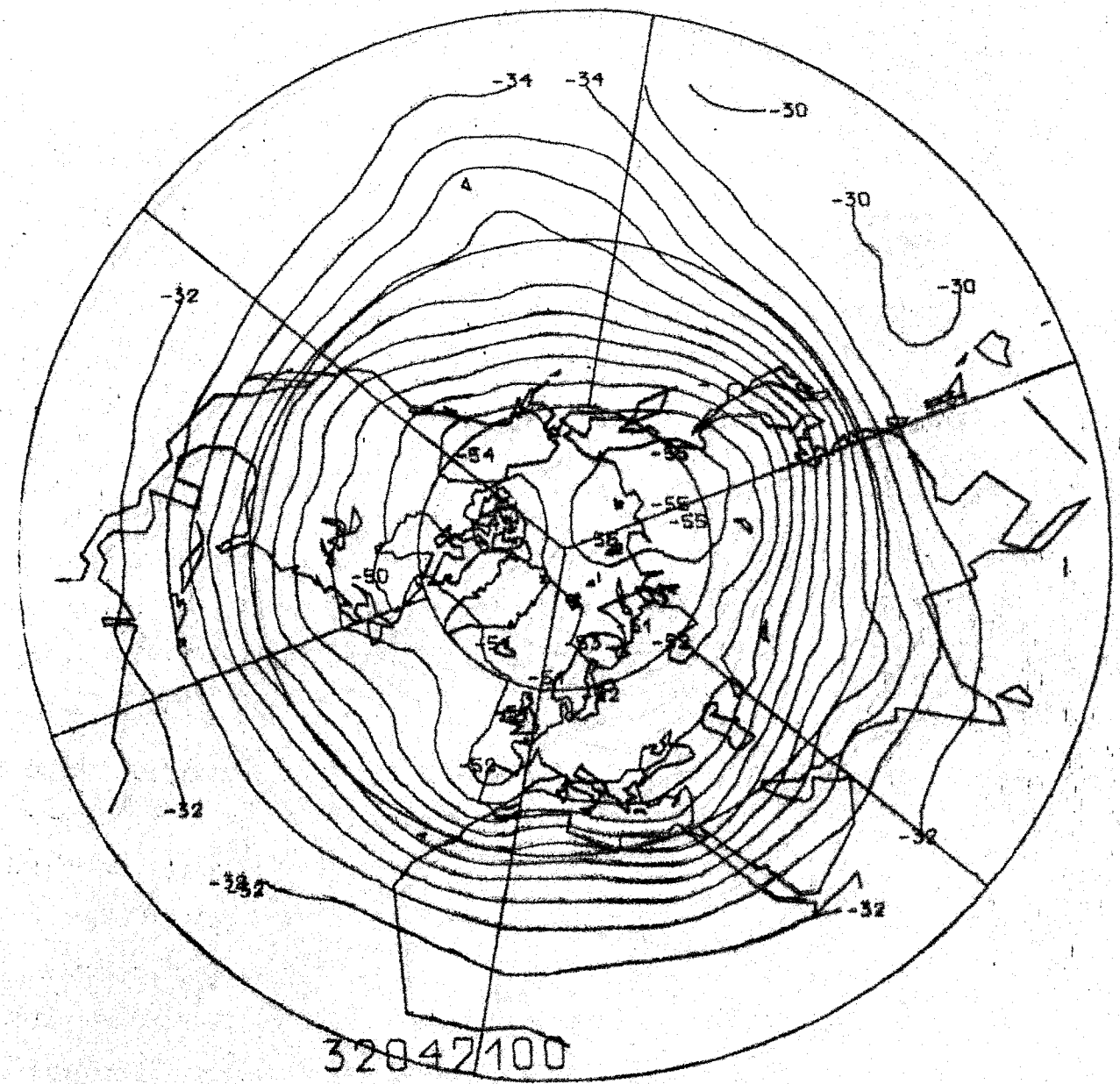

FIG. 97a

$[\phi]_{(t)}$ 300mb APRIL 1971

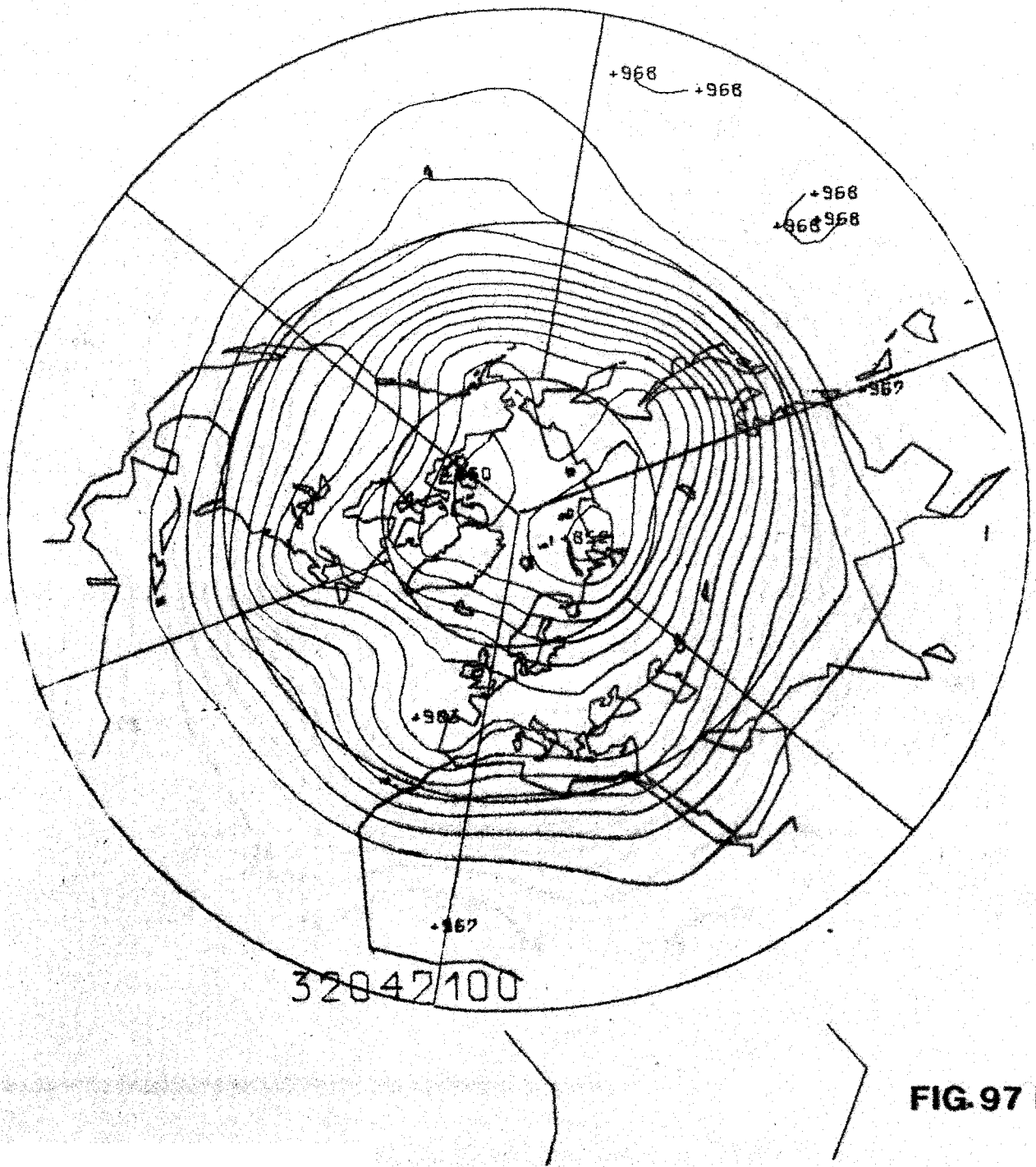

FIG. 97 b

$[T]_{(t)}$ 100 mb APRIL 1971

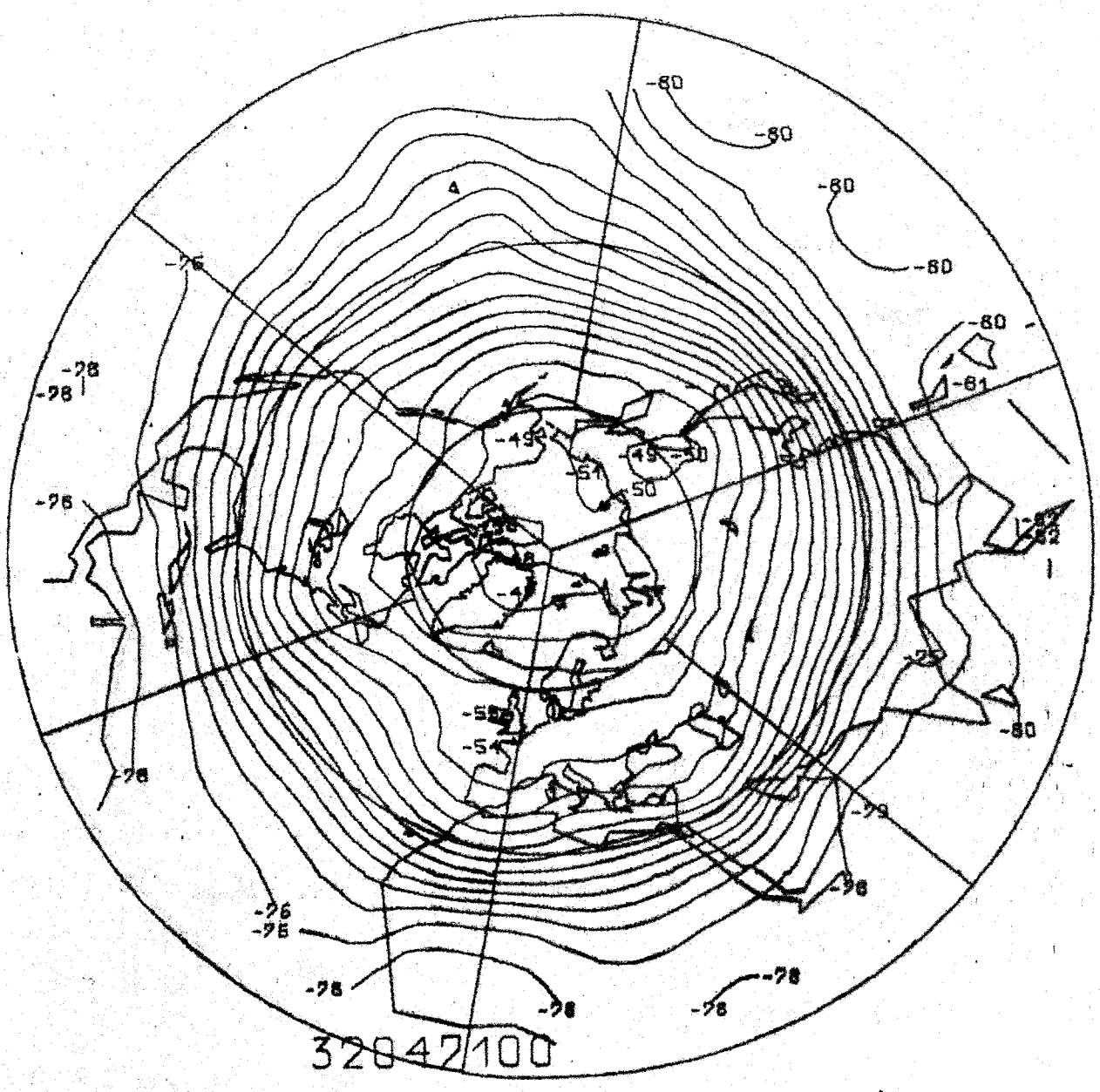

FIG. 98a

$[\phi]_{(t)}$ 100mb APRIL 1971

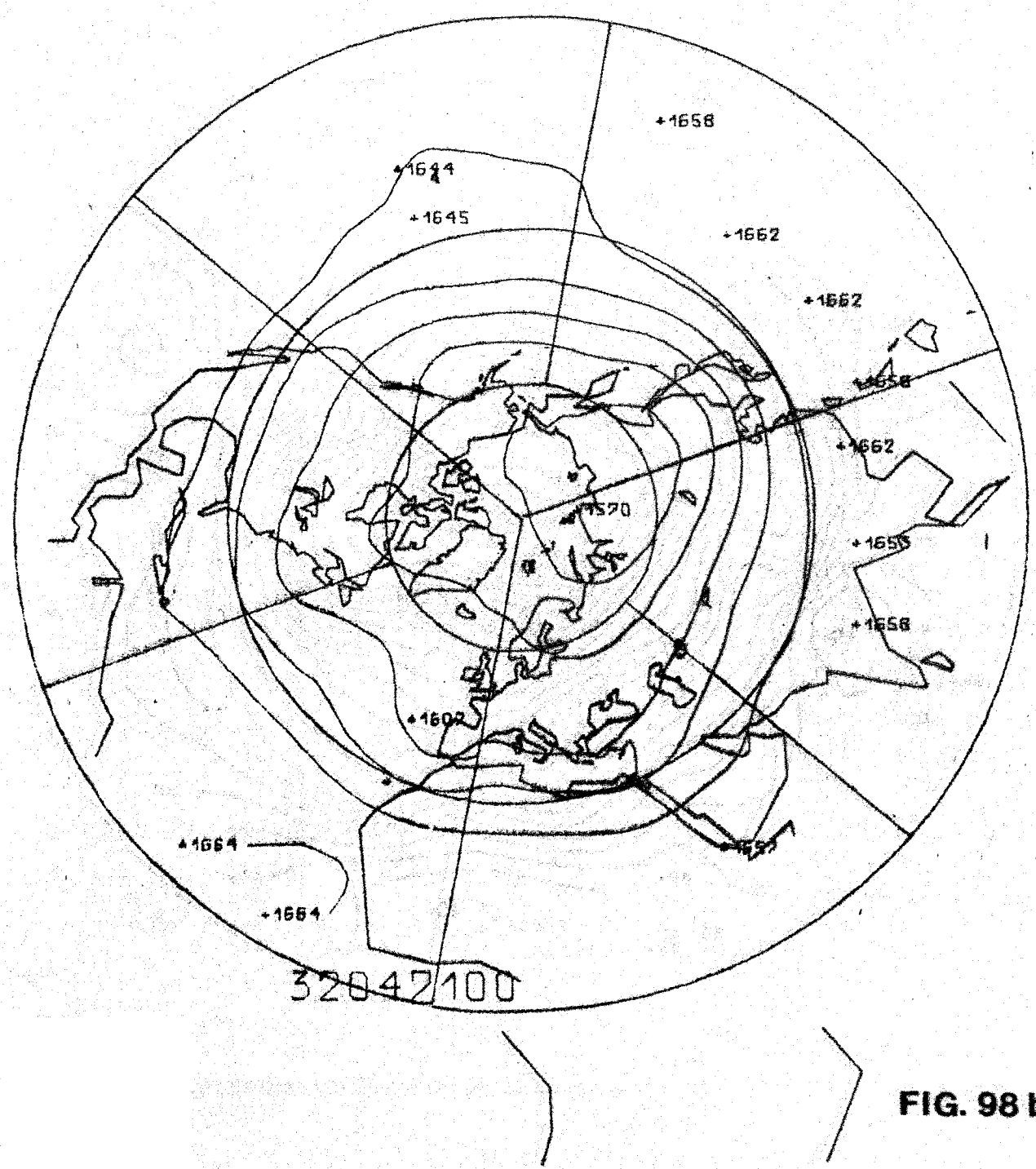

FIG. 98 b

$[T]_{(t)}$ 850 mb APRIL 1972

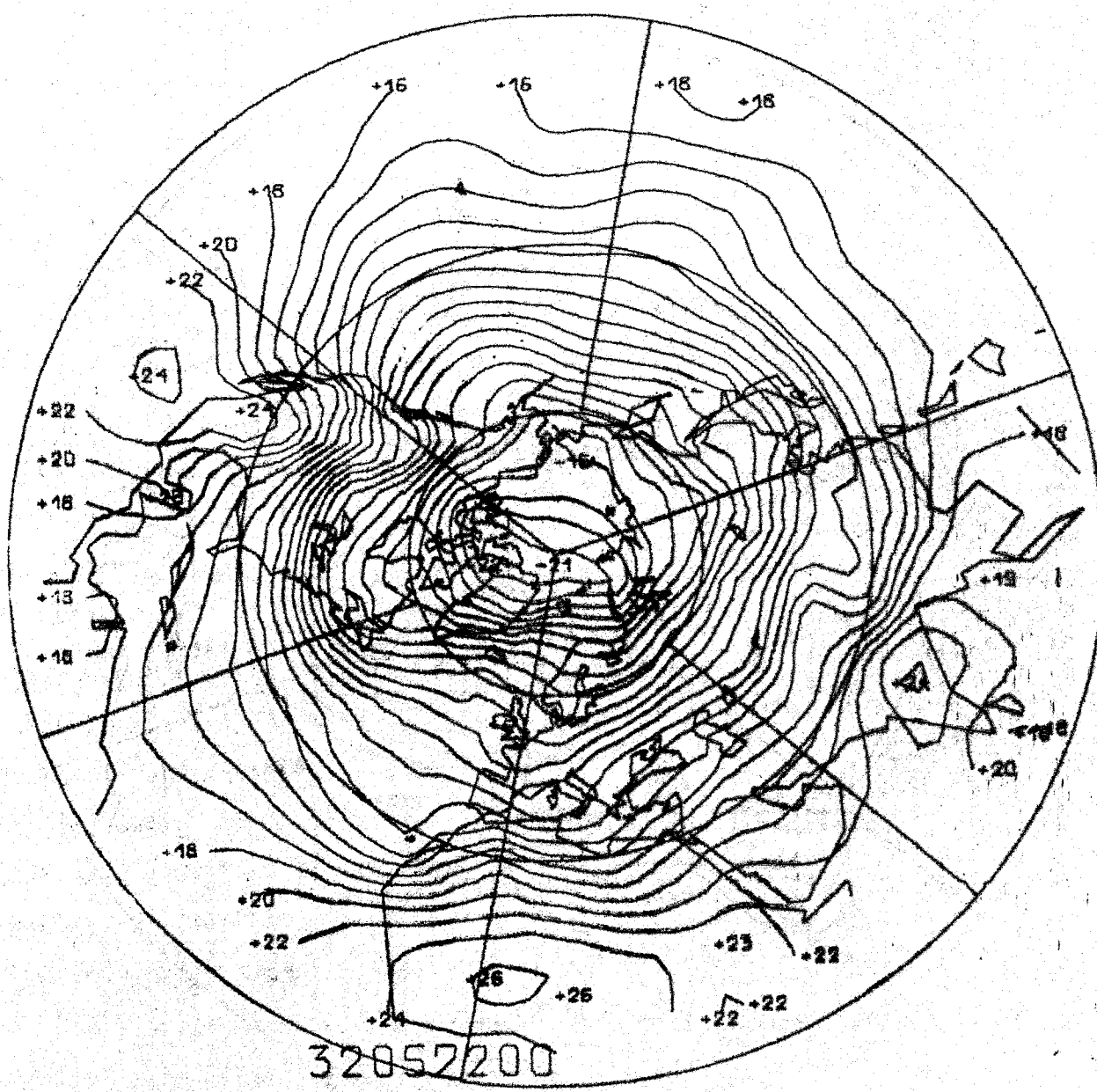

FIG. 99 a

$[\Phi]_{(t)}$ 850mb APRIL 1972

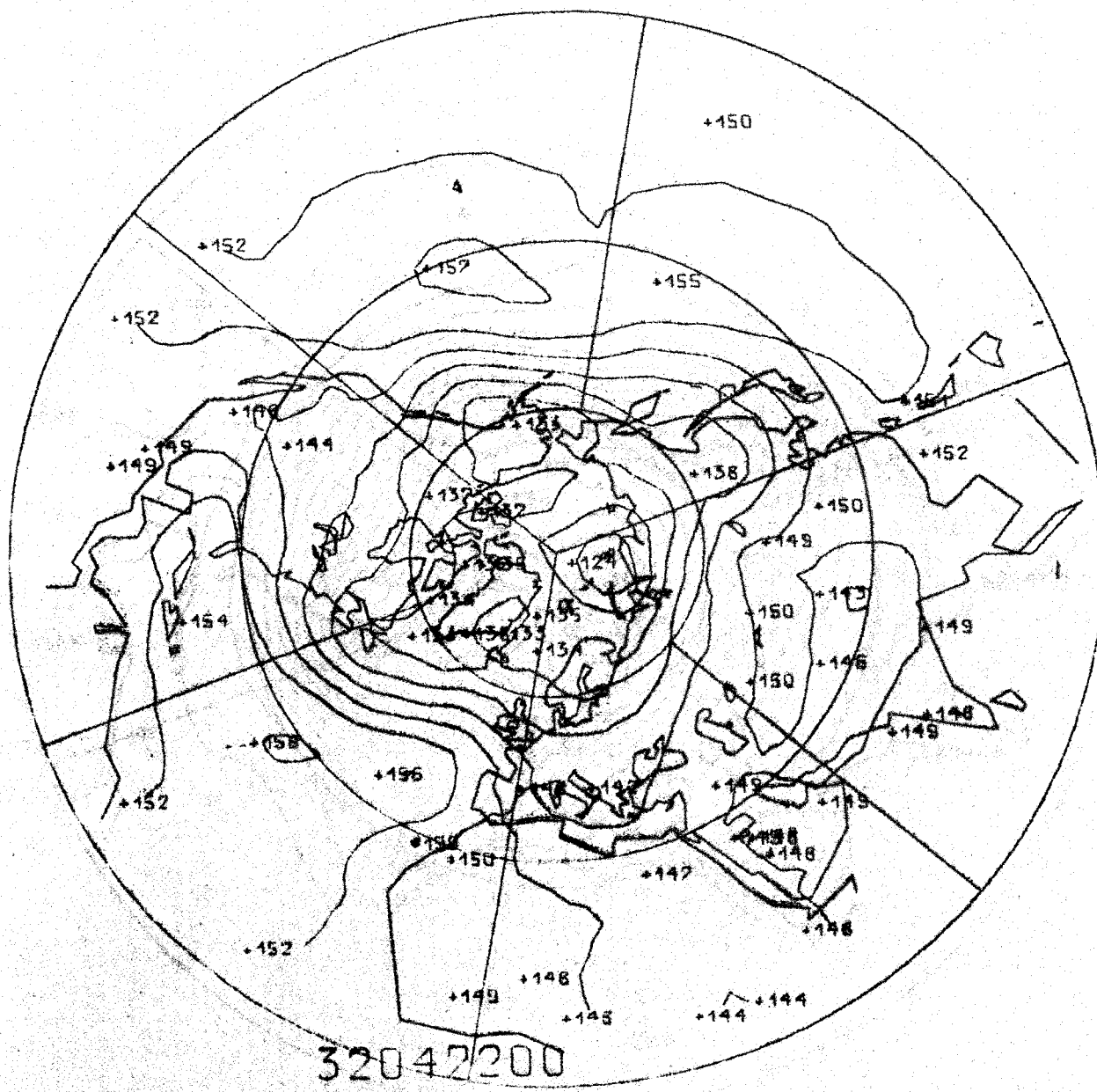

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FIG. 99 b

$[\Phi]_{(t)}$ 500 mb APRIL 1972

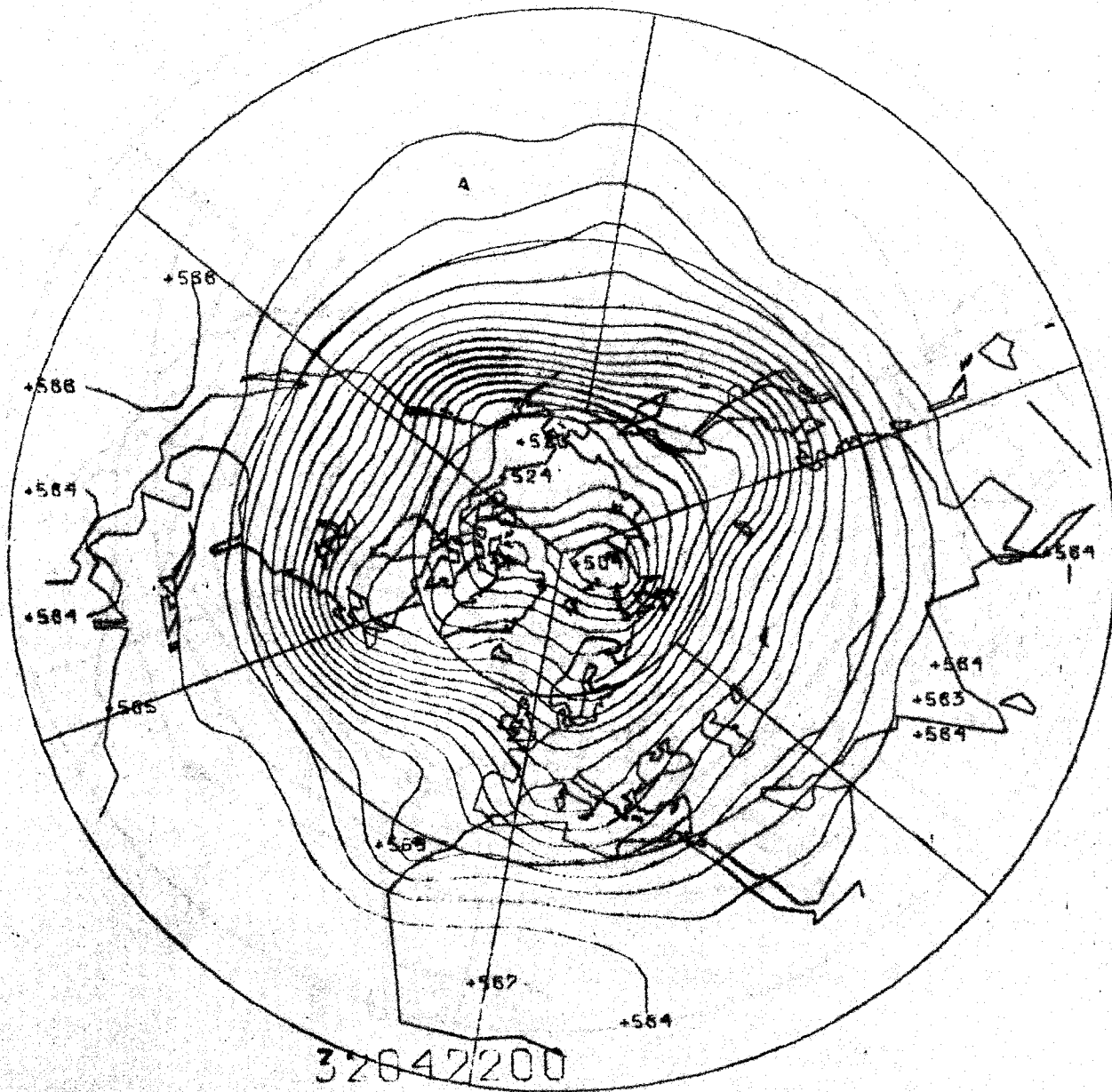
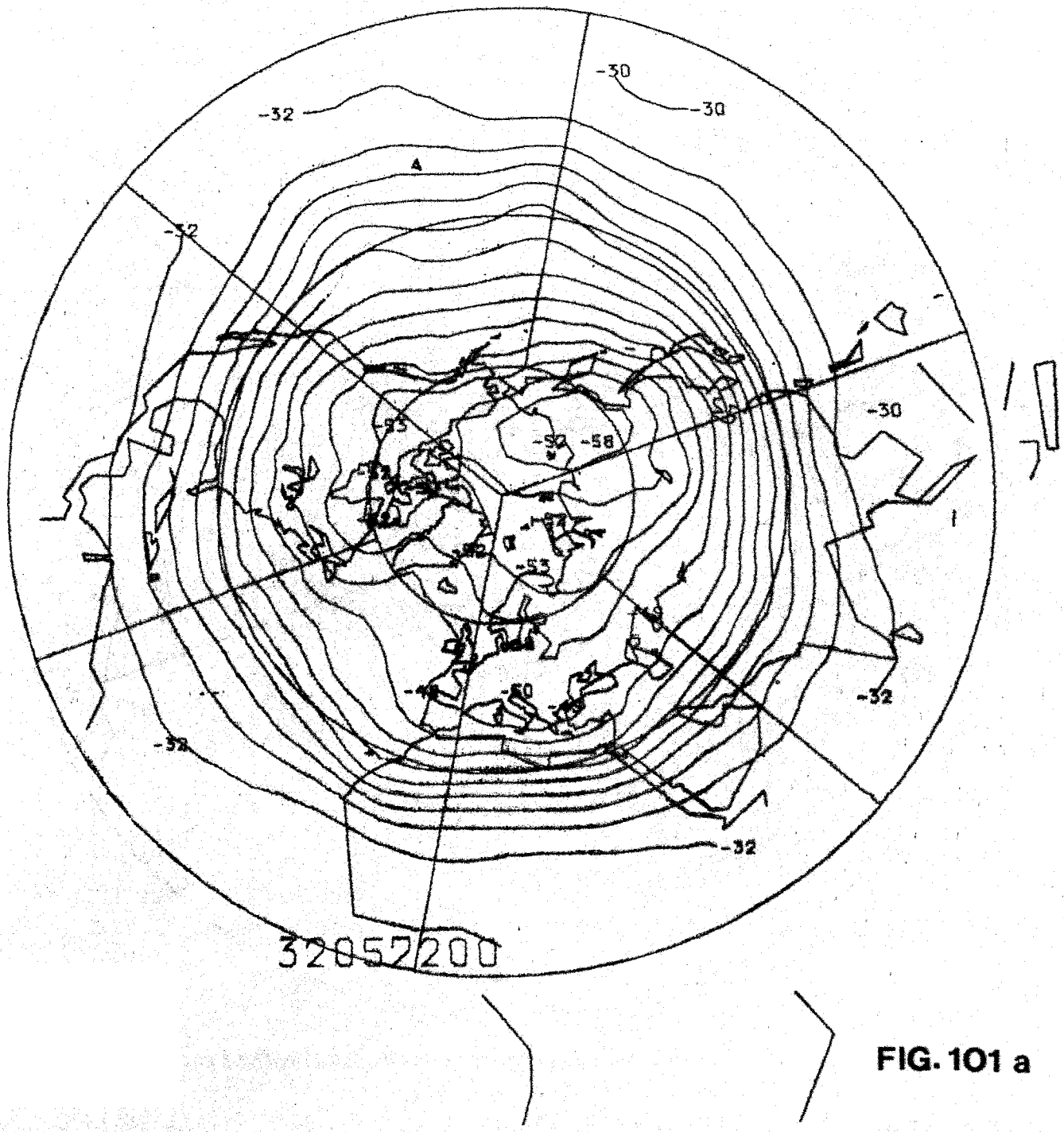


FIG. 100

$[T]_{(t)}$ 300mb APRIL 1972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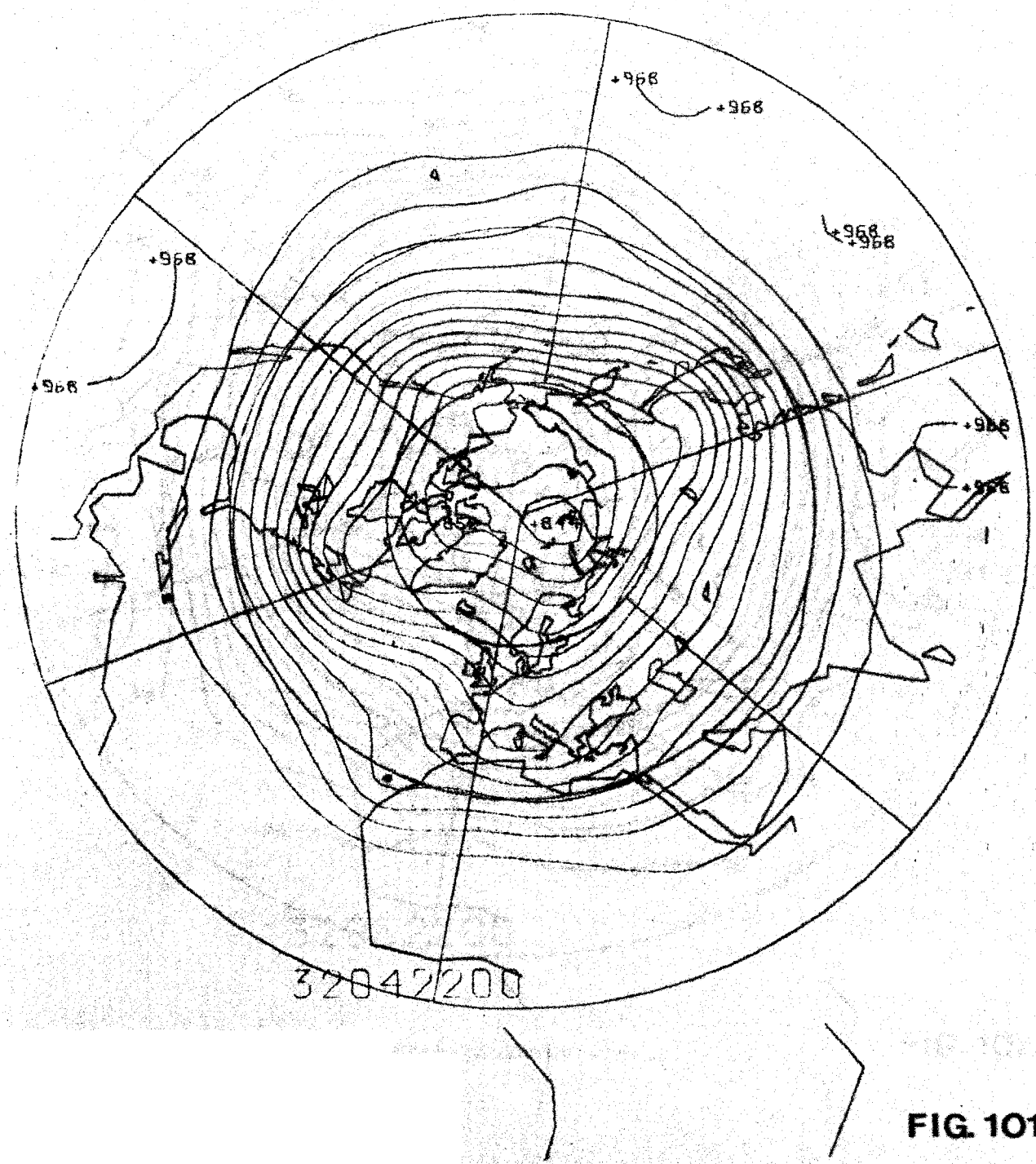
$[\phi]_{(t)}$ 300mb APRIL 1972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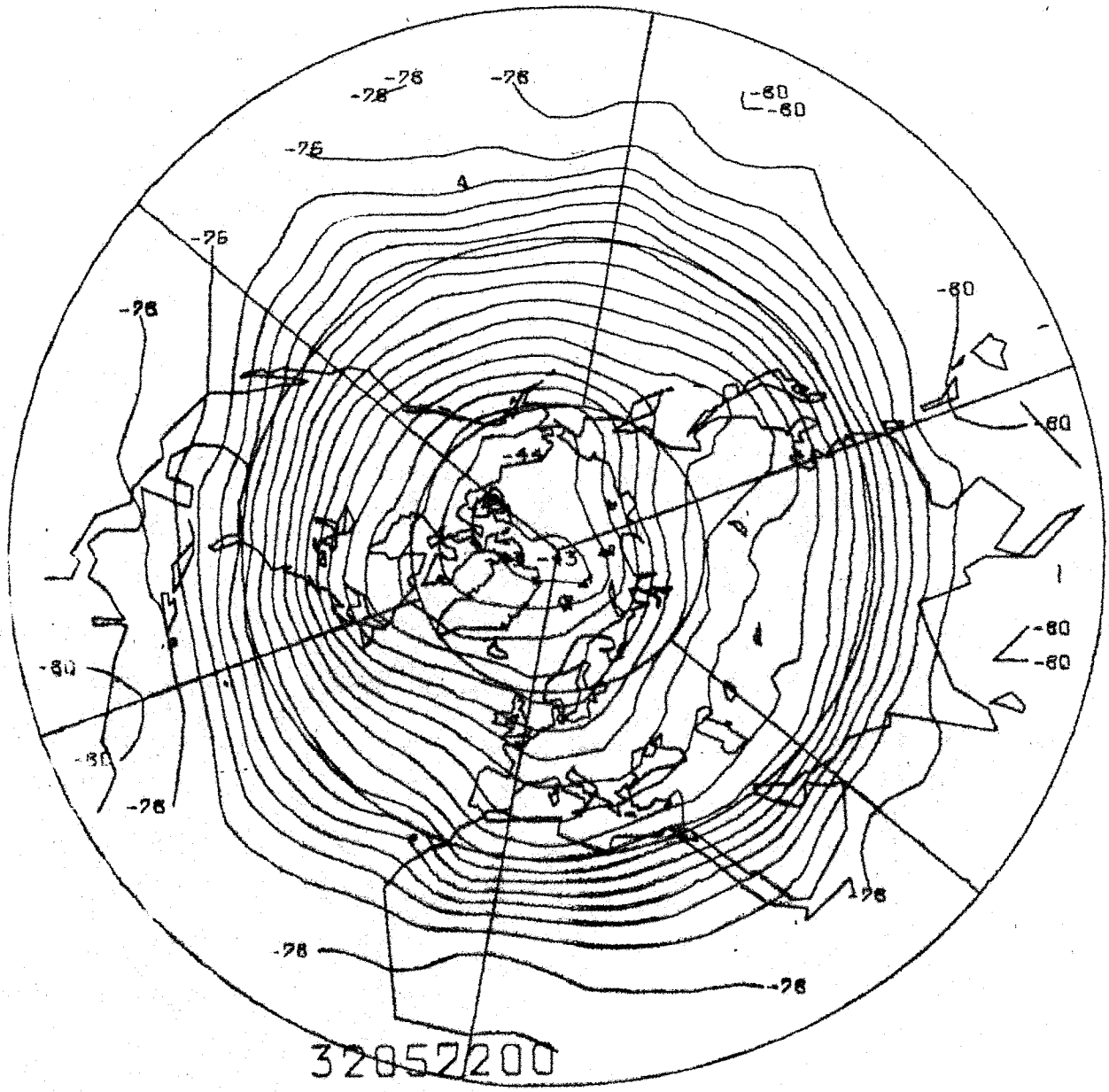
$[T]_{(t)}$ 100 mb APRIL 1972


-78
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$[\phi]_{(t)}$ 100mb APRIL 1972

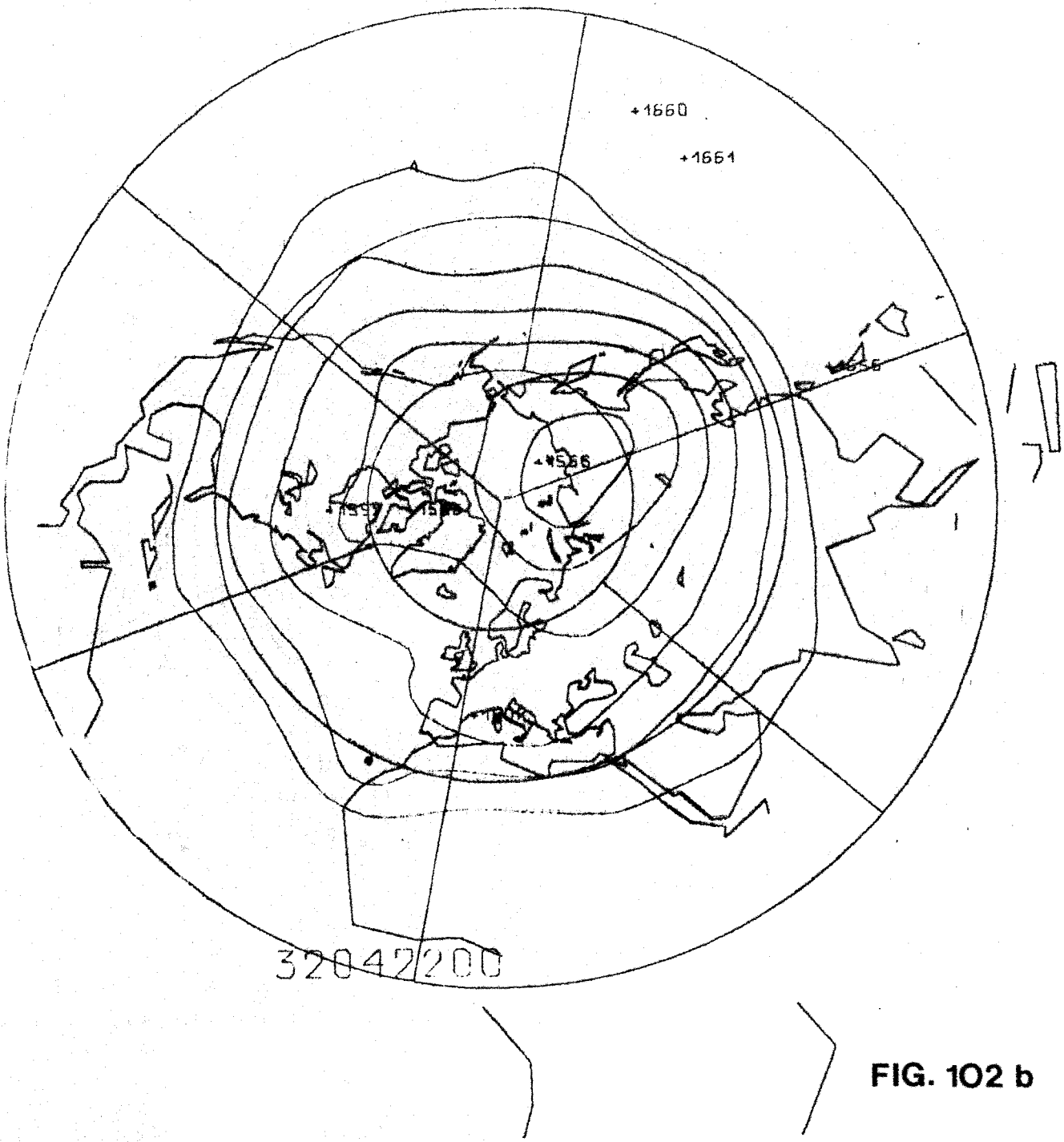


FIG. 102 b

$[T]_{(t)}$ 850 mb APRIL 1973

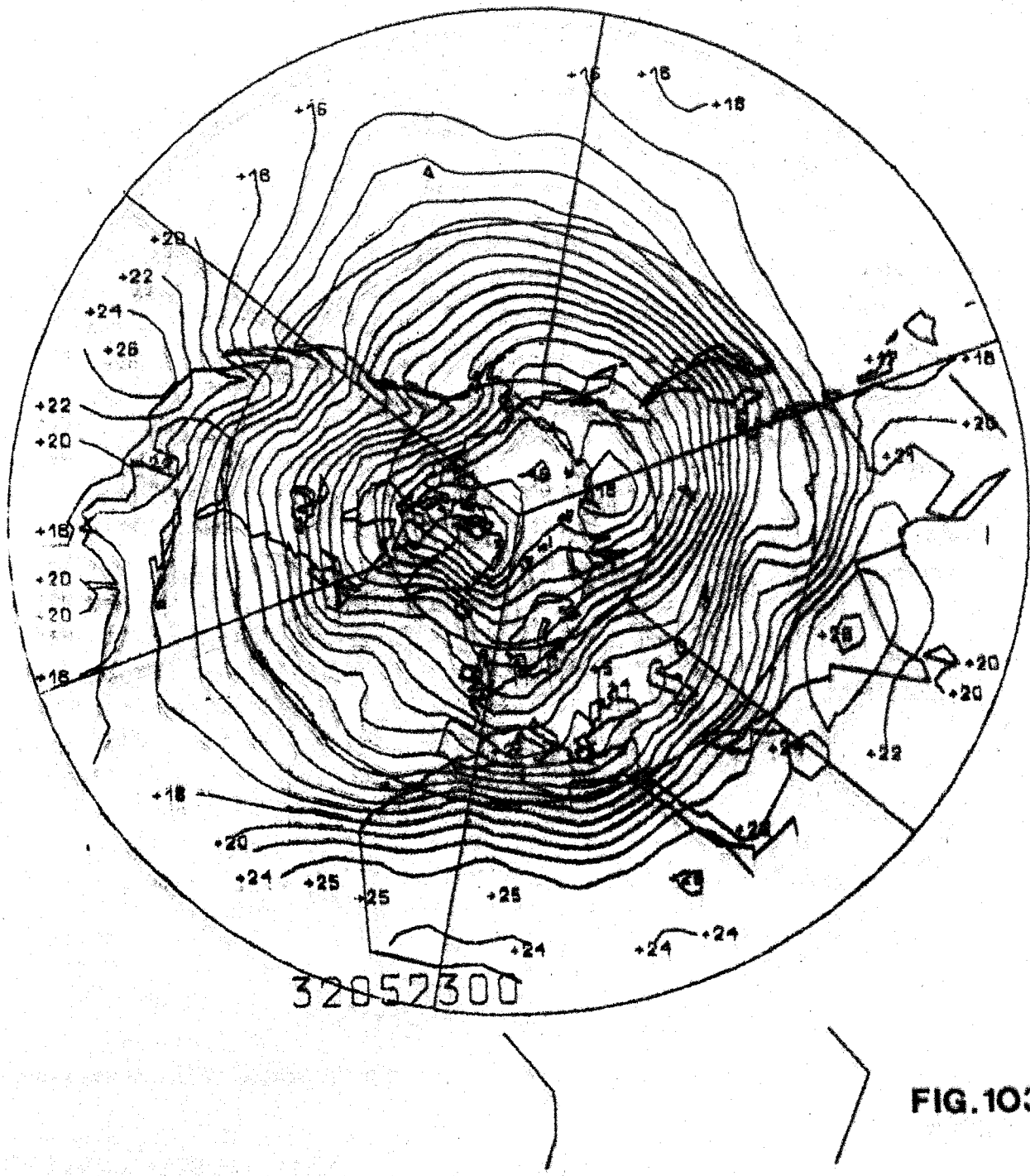


FIG. 103 a

$[\phi]_{(t)}$ 850mb APRIL 1973

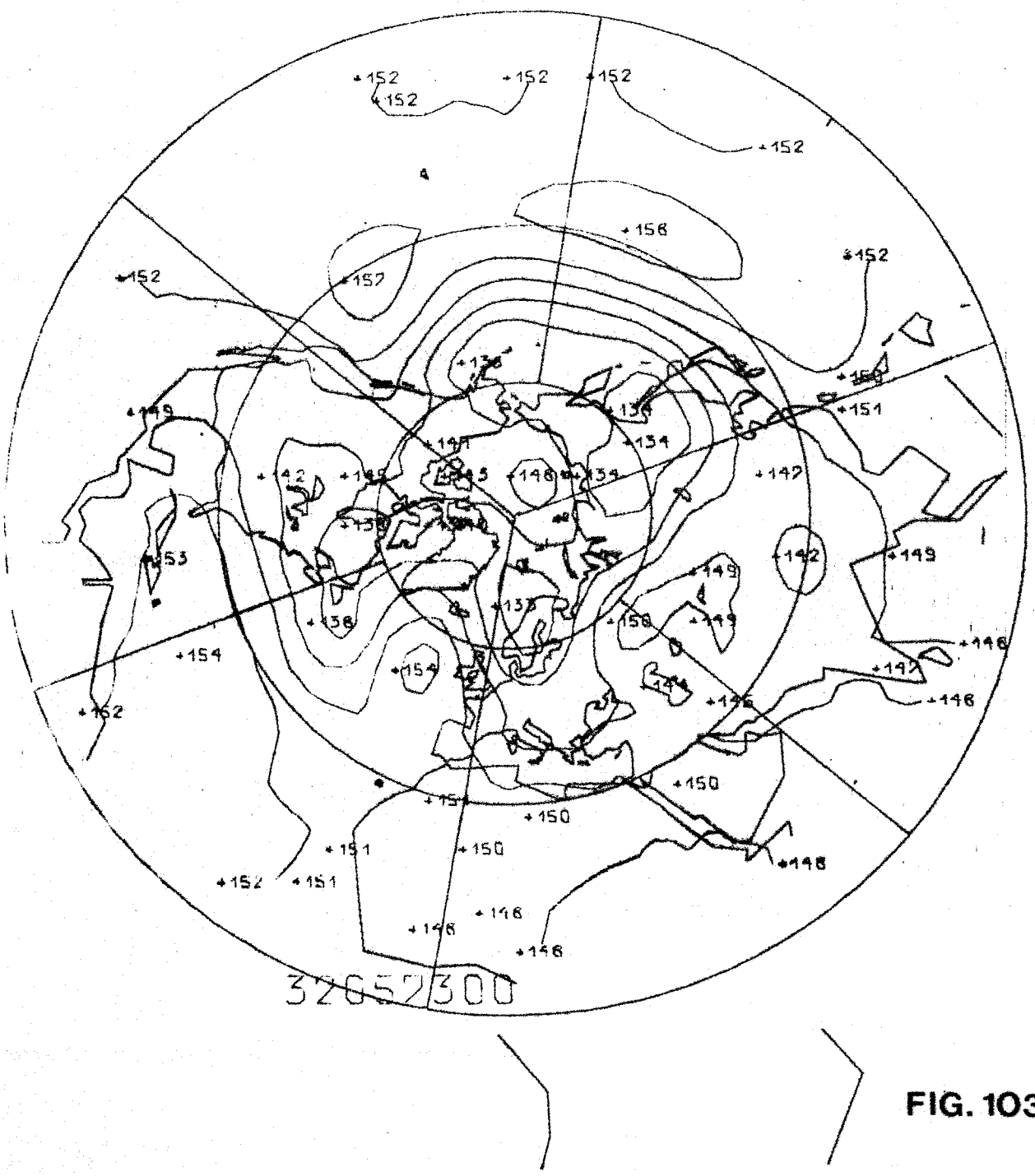
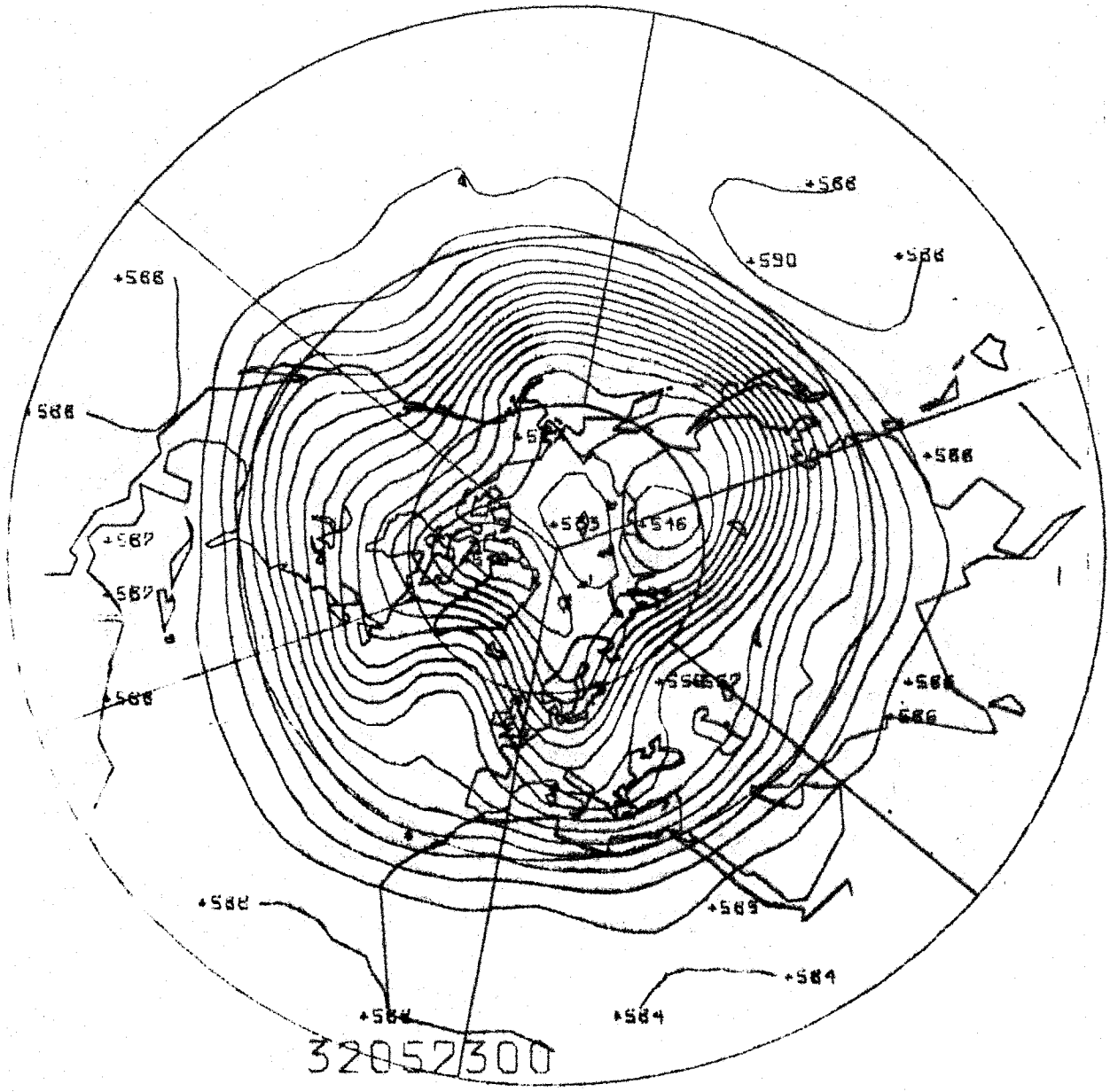


FIG. 103 b

$[\phi]_{(t)}$ 500mb APRIL 1973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$[T]_{(t)}$ 300 mb APRIL 1973

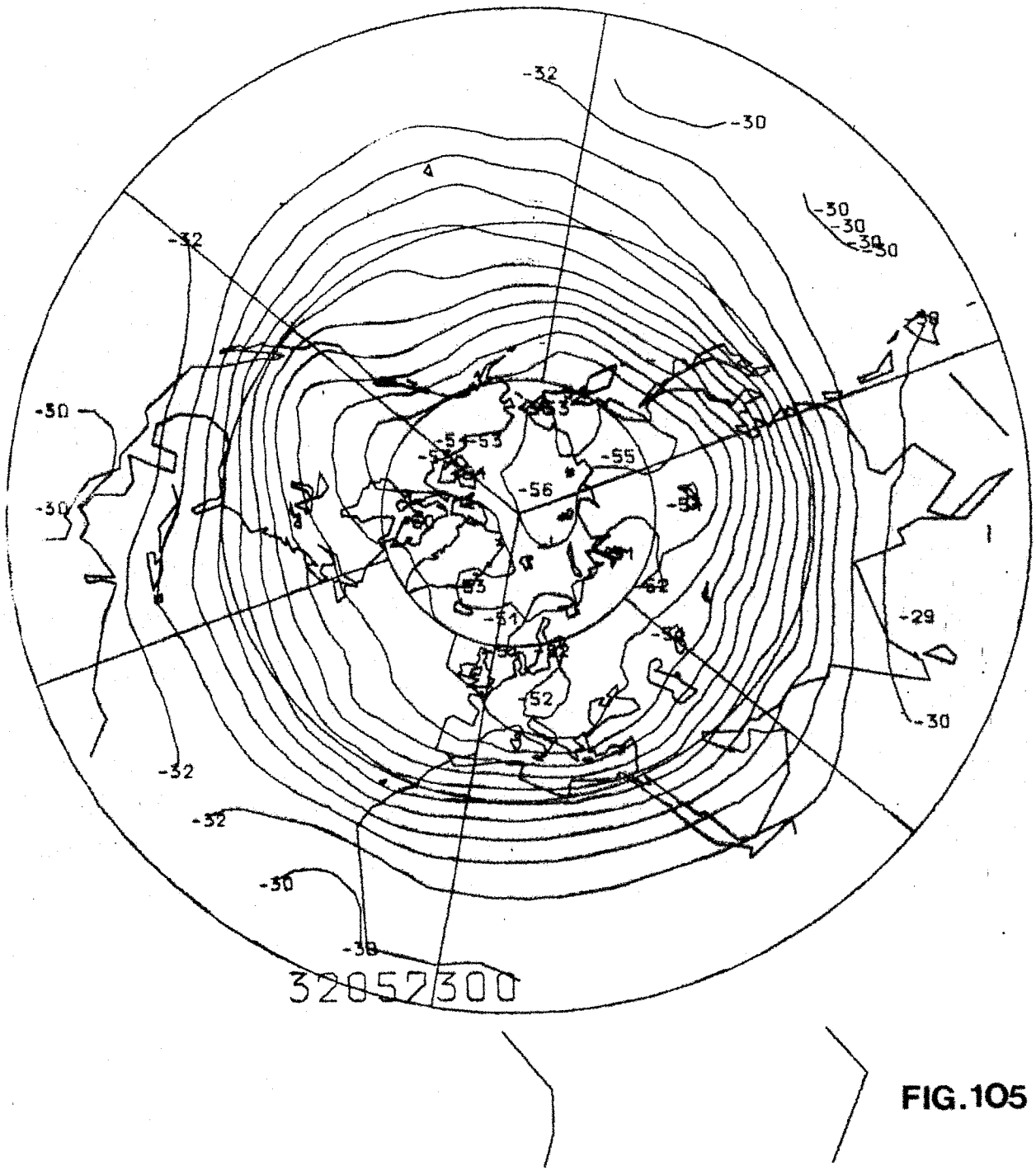


FIG. 105 a

$[\phi]_{(t)}$ 300mb APRIL 1973

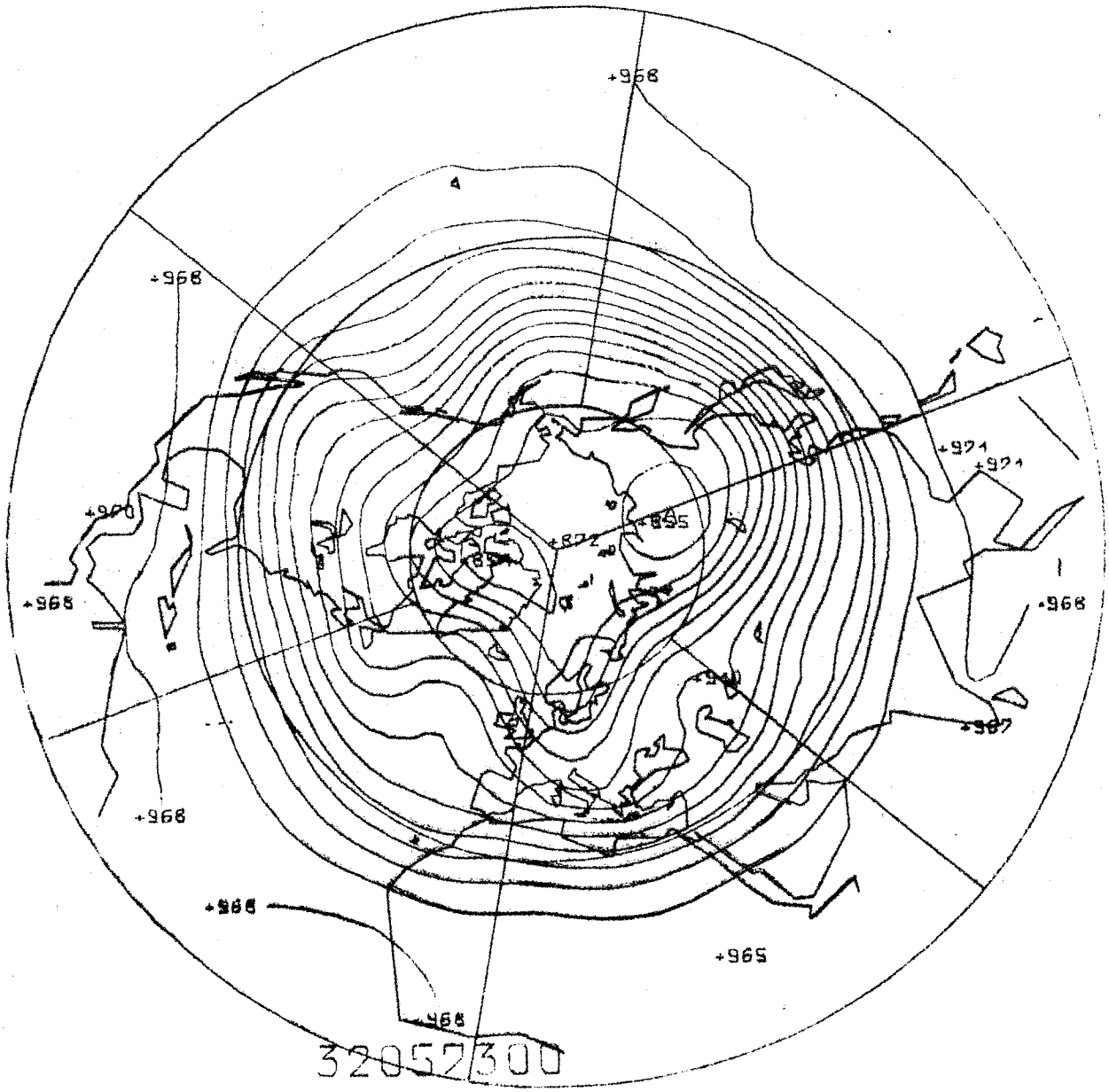


FIG. 105 b

$[T]_{(t)}$ 100 mb APRIL 1973

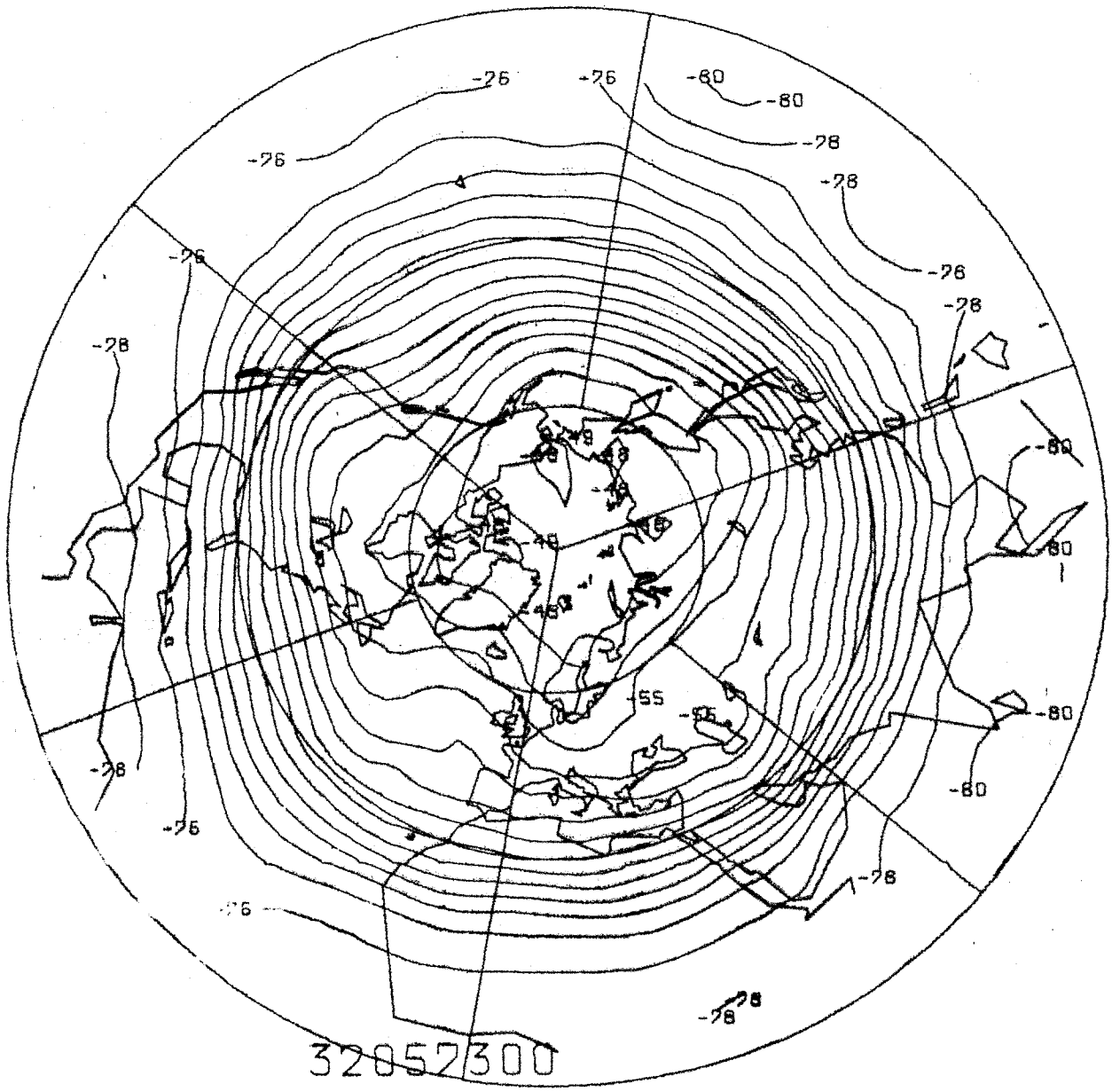


FIG. 106a

$[\Phi]_{(t)}$ 100mb APRIL 1973

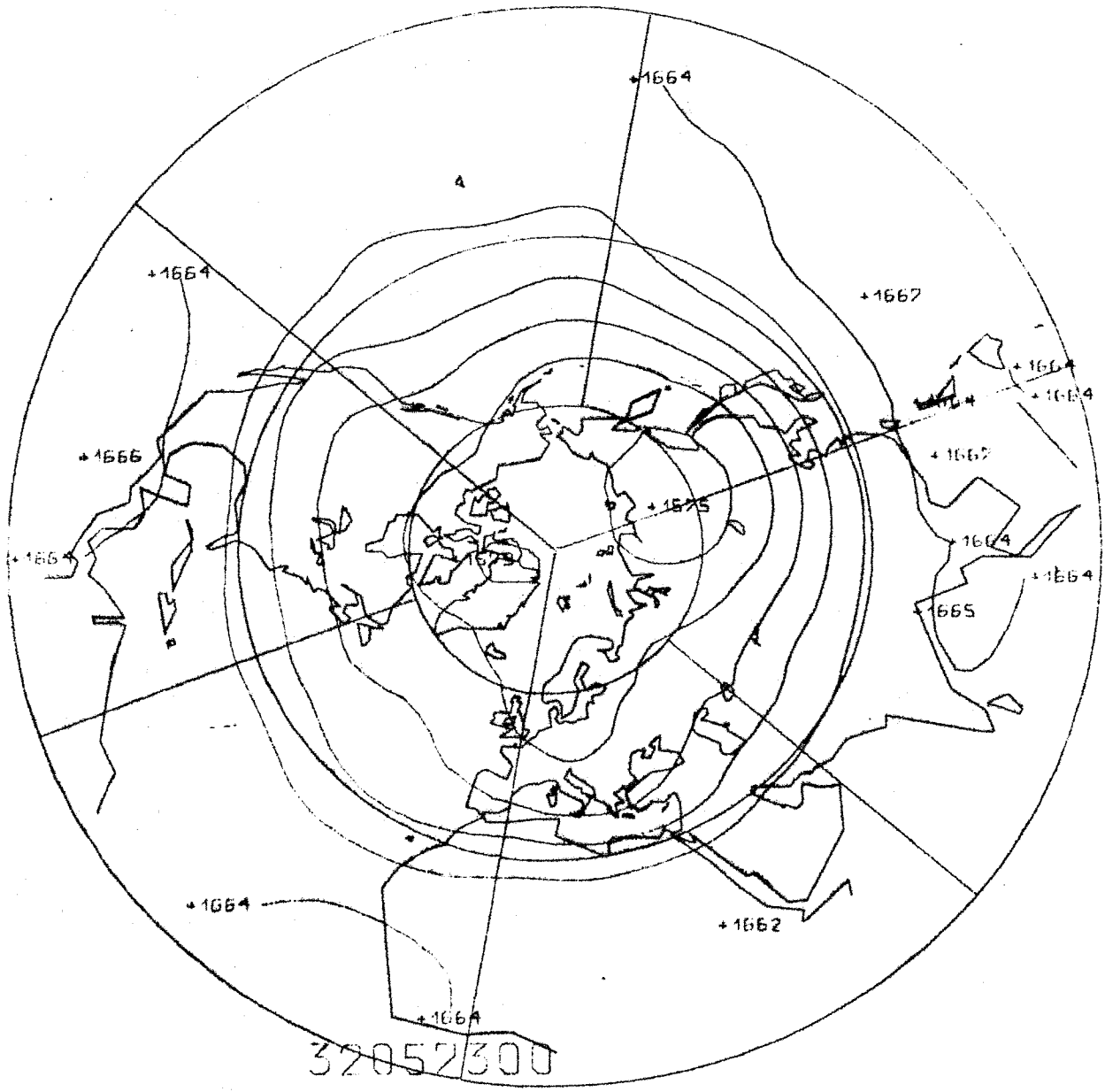
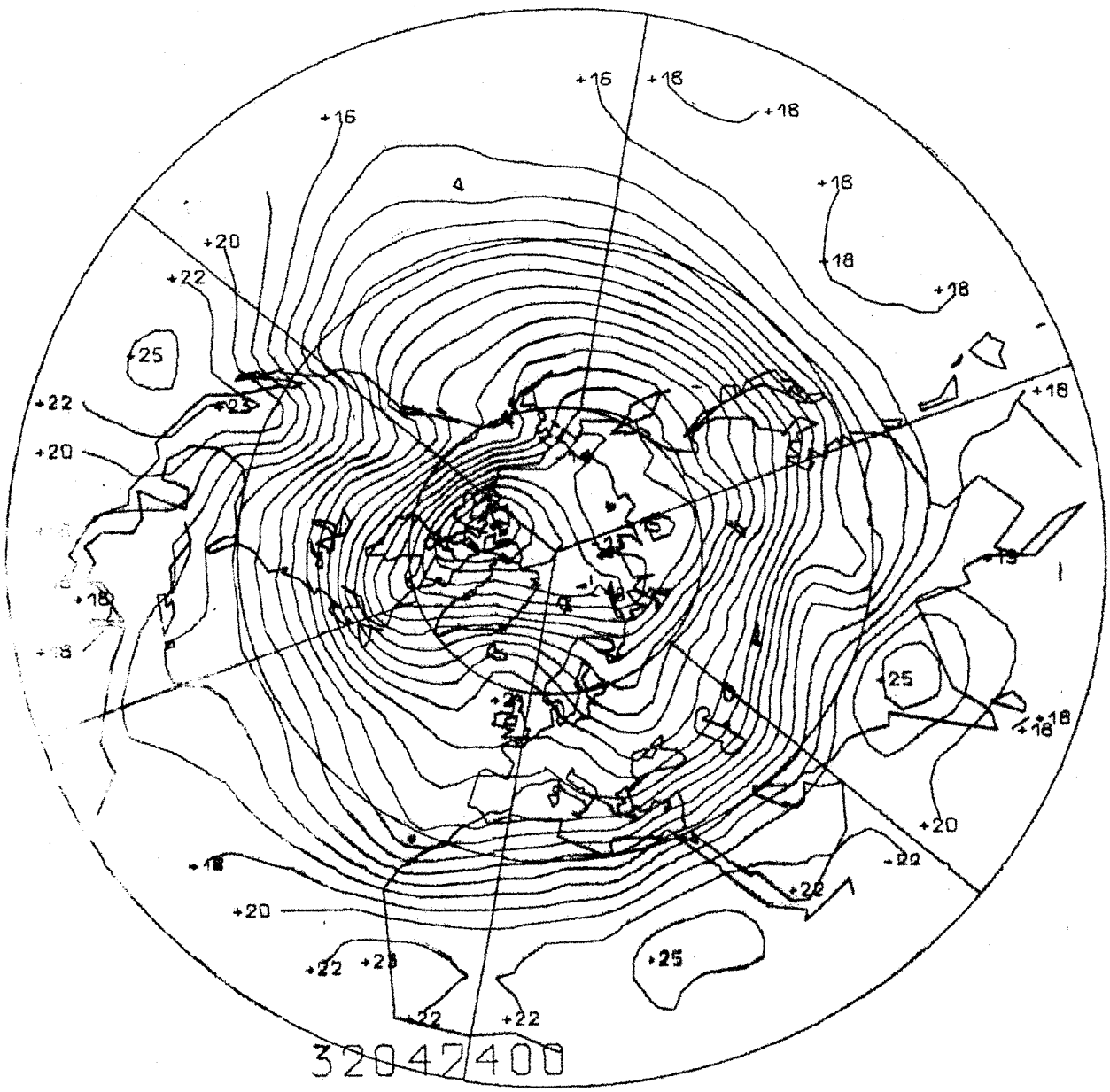


FIG. 106b

$[T]_{(t)}$ 850mb APRIL 1974



32047400

FIG. 107a

$[\phi]_{(t)}$ 850 mb APRIL 1974

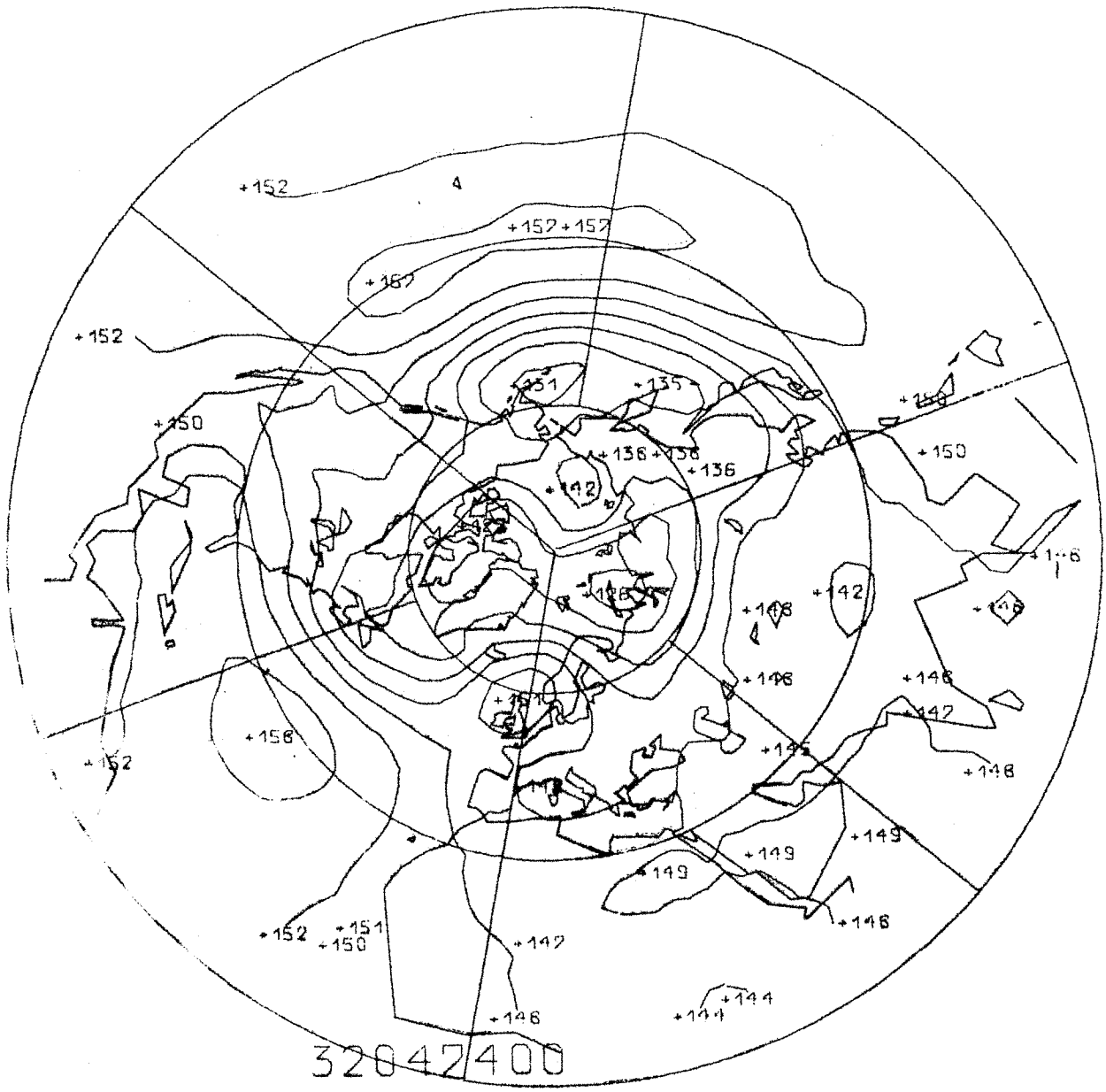


FIG.107 b

$[\phi]_{(t)}$ 500 mb APRIL 1974

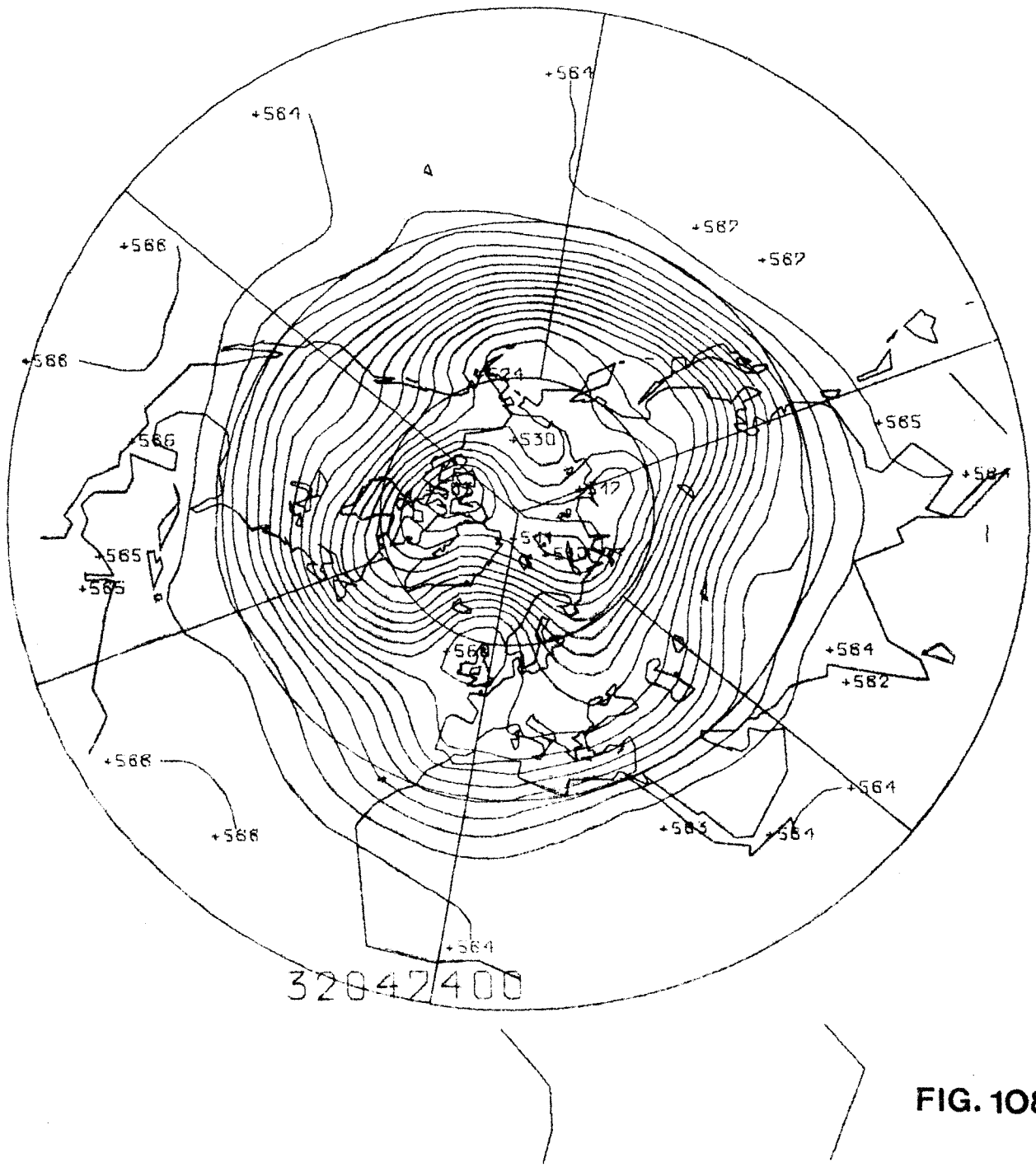


FIG. 108

$[T]_{(t)}$ 300 mb APRIL 1974

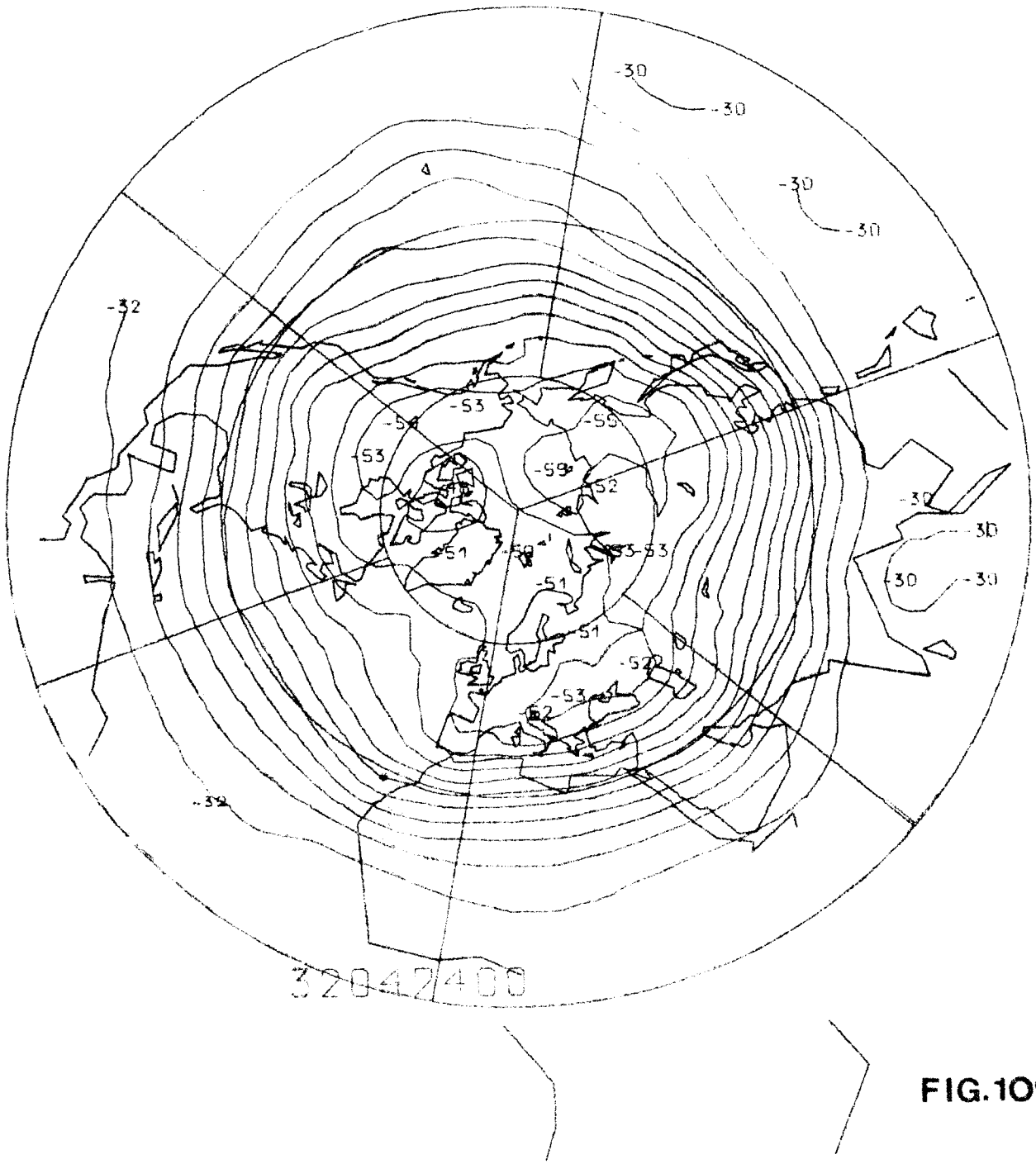
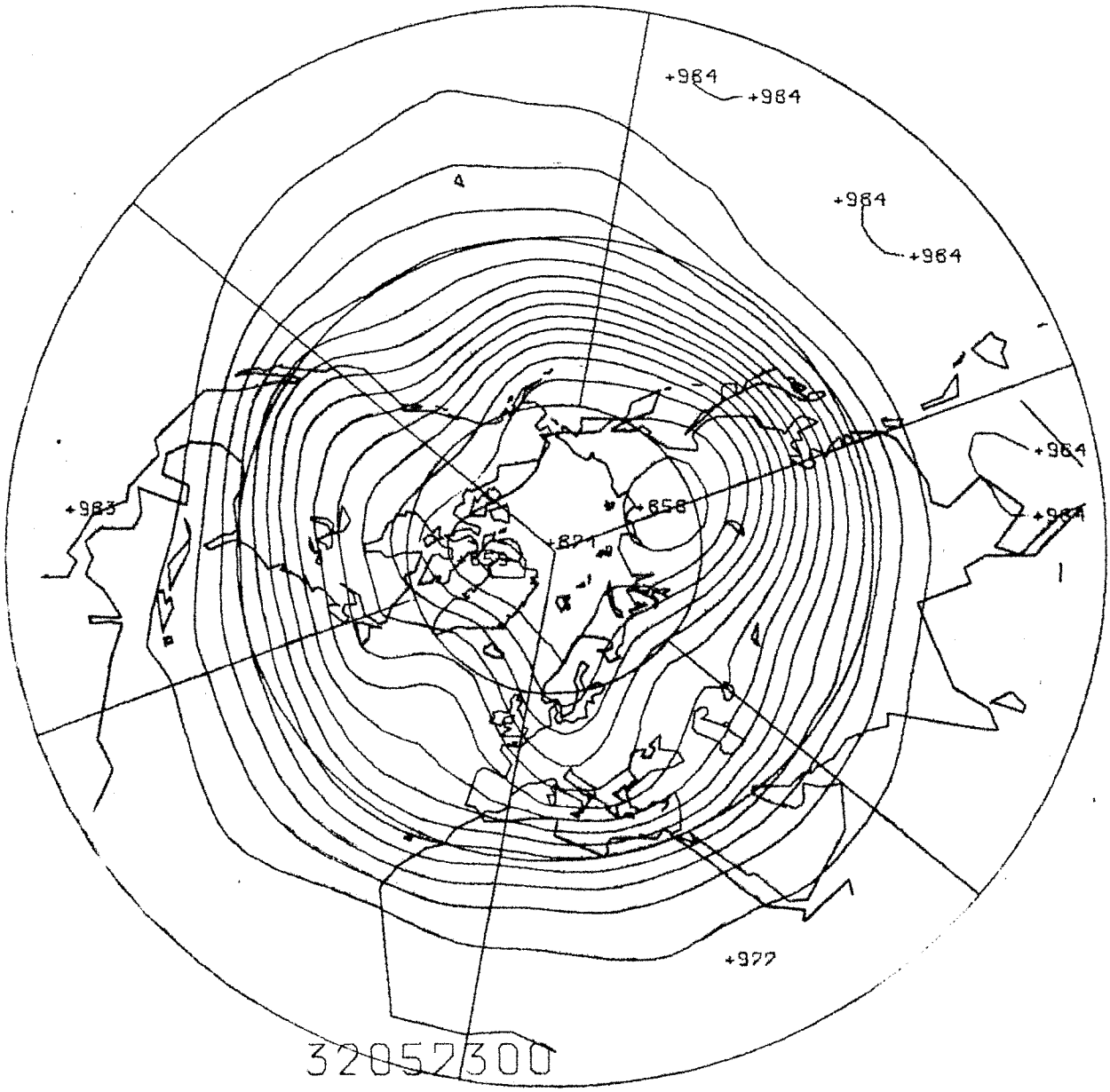


FIG. 109 a

$[\Phi]_{(t)}$ 300mb APRIL 1974



32052300

FIG. 109 b

$[T]_{(t)}$ 100 mb APRIL 1974

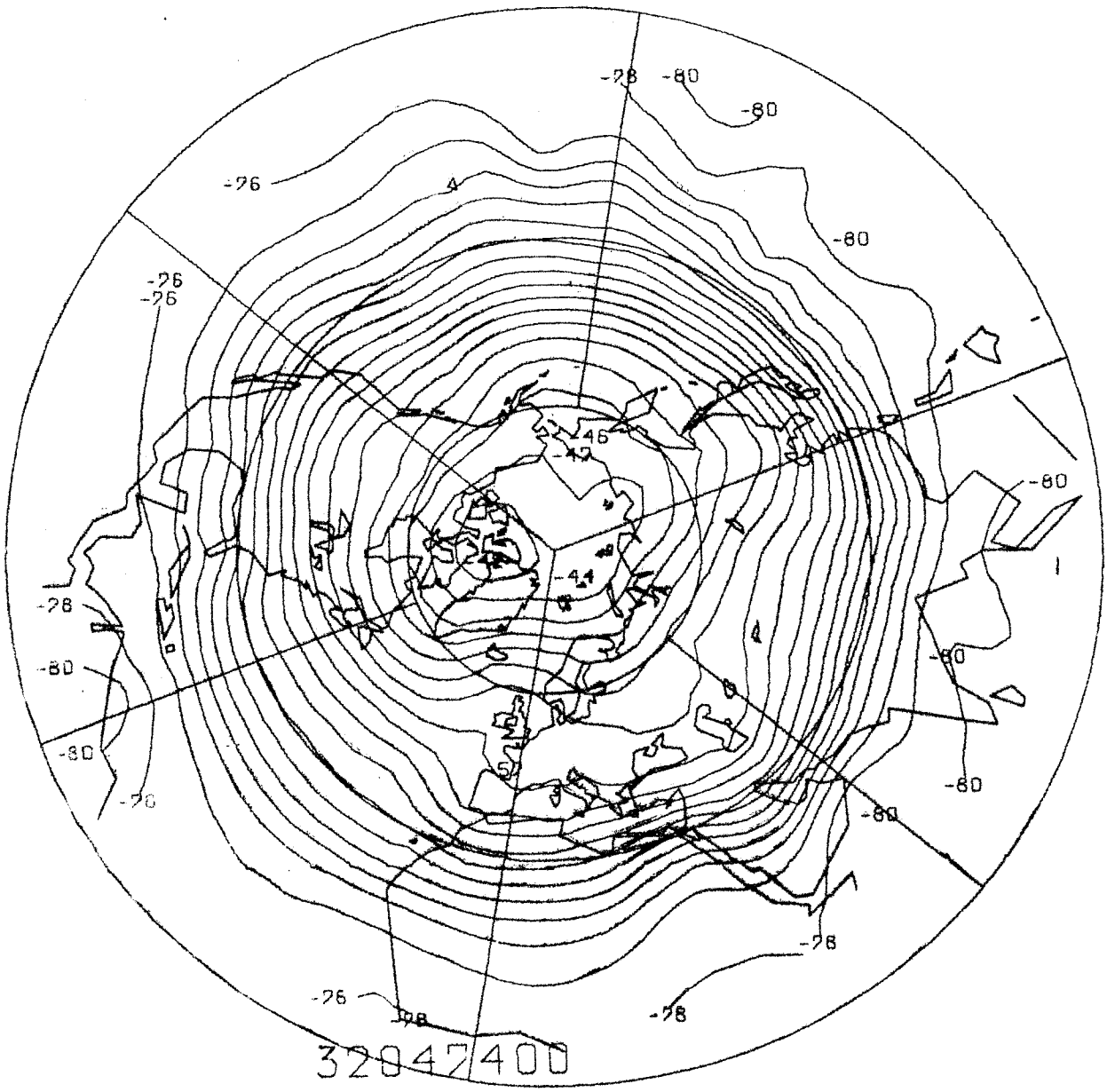


FIG. 110 a

$[\phi]_{(t)}$ 100mb APRIL 1974

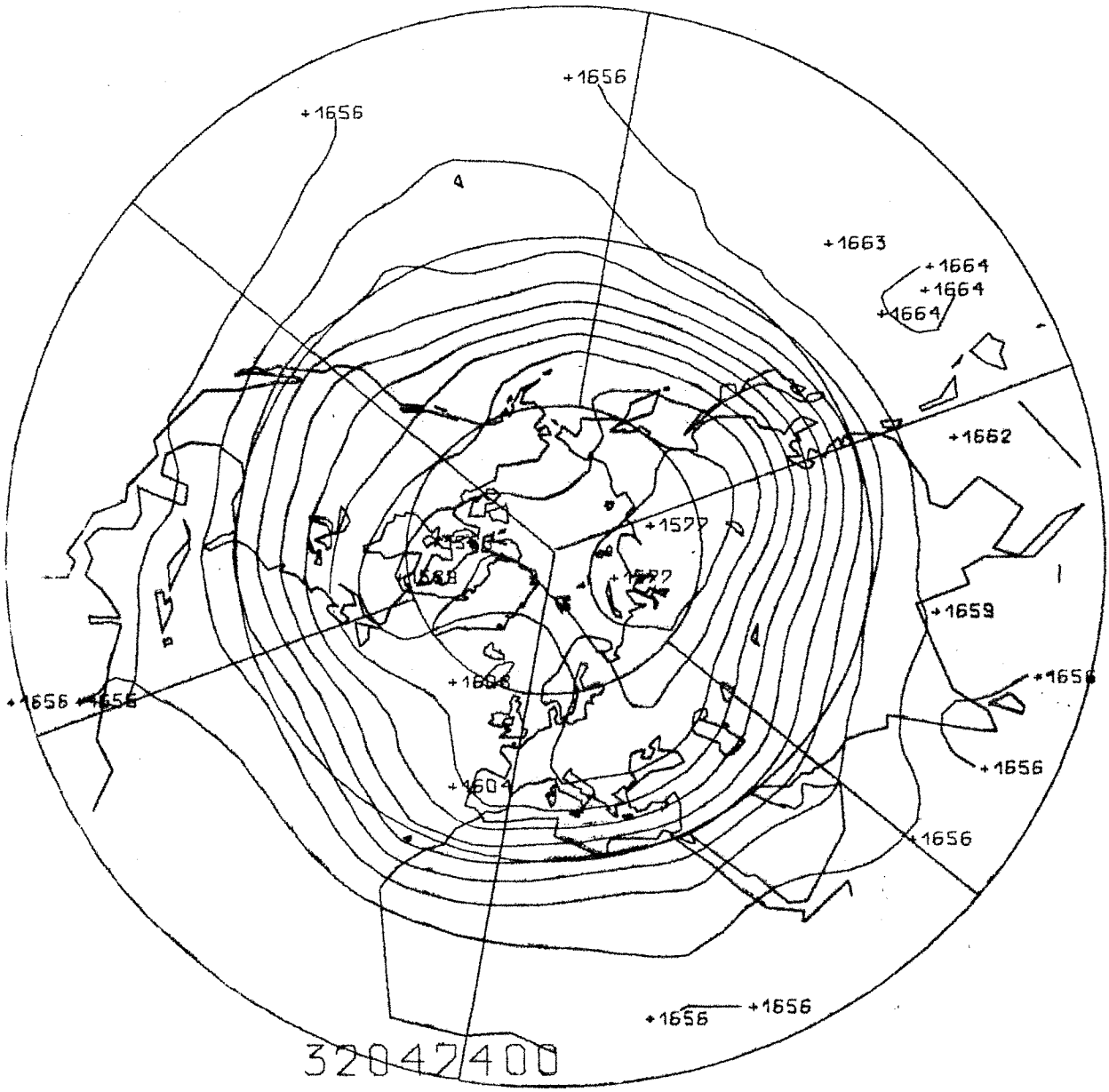
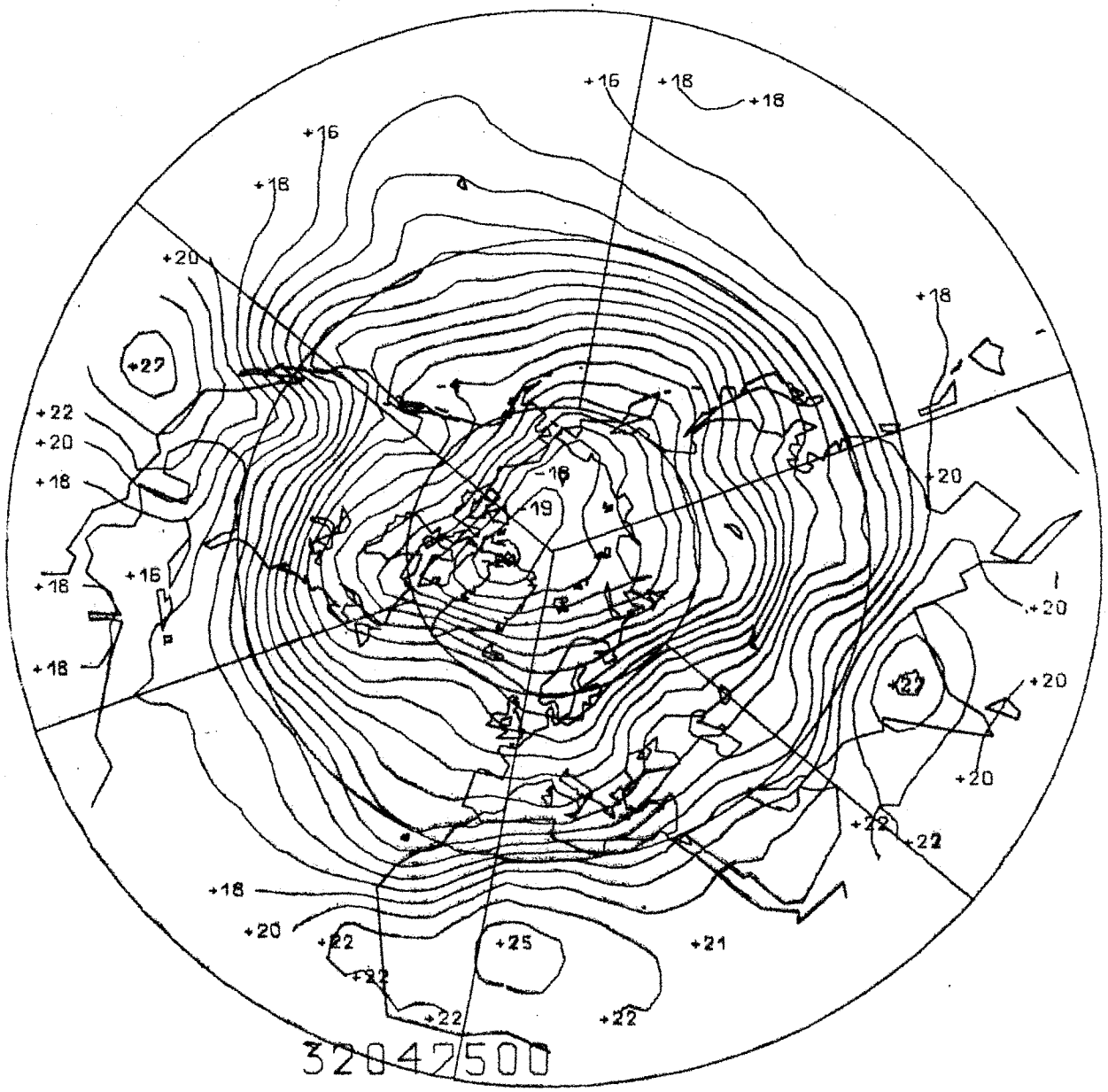


FIG. 11O b

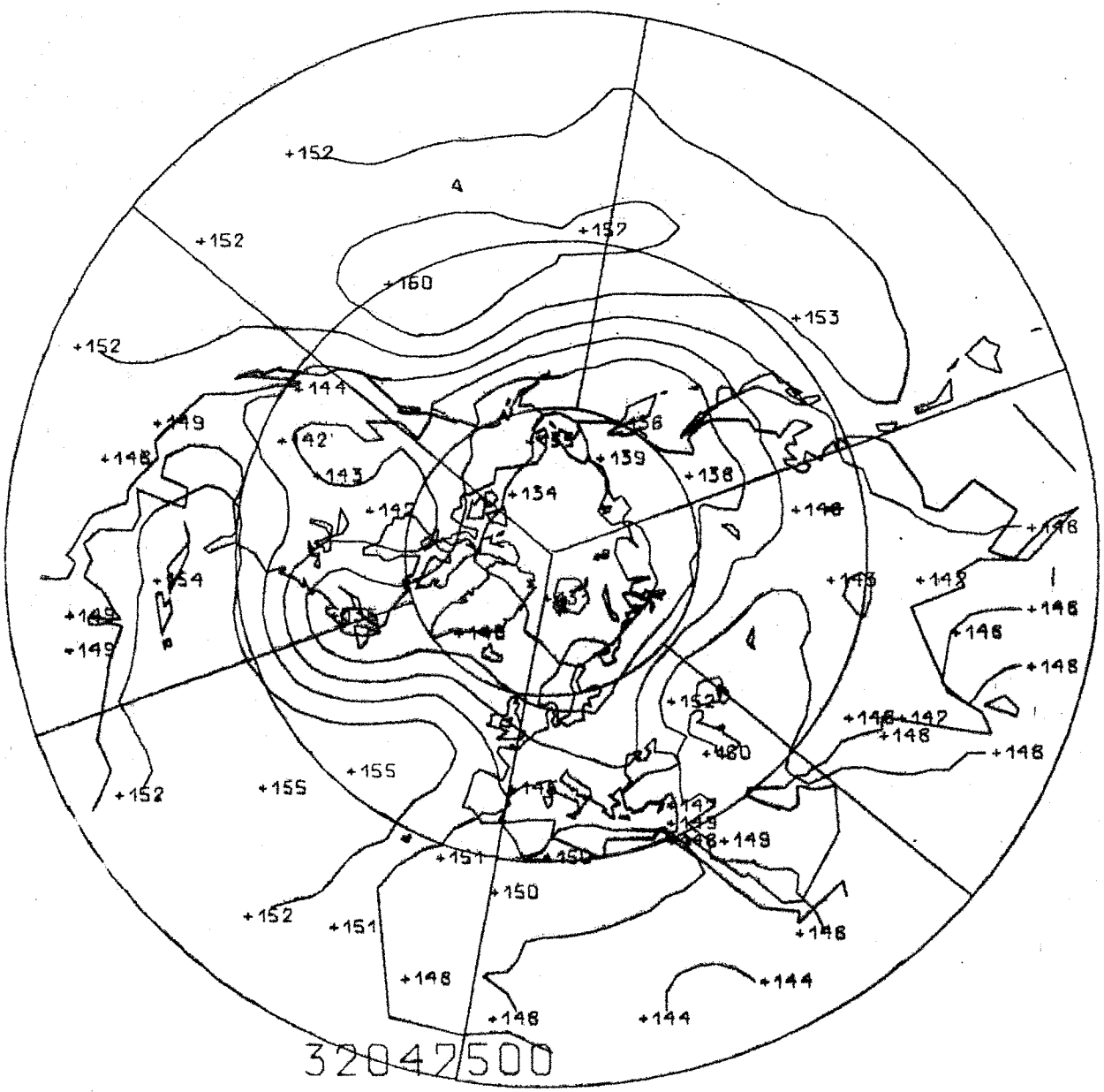
$[\bar{T}]_{(t)}$ 850 mb APRIL 1975



32047500

FIG. 111a

$[\phi]_{(t)}$ 850mb APRIL 1975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$[\Phi]_{(t)}$ 500mb APRIL 1975

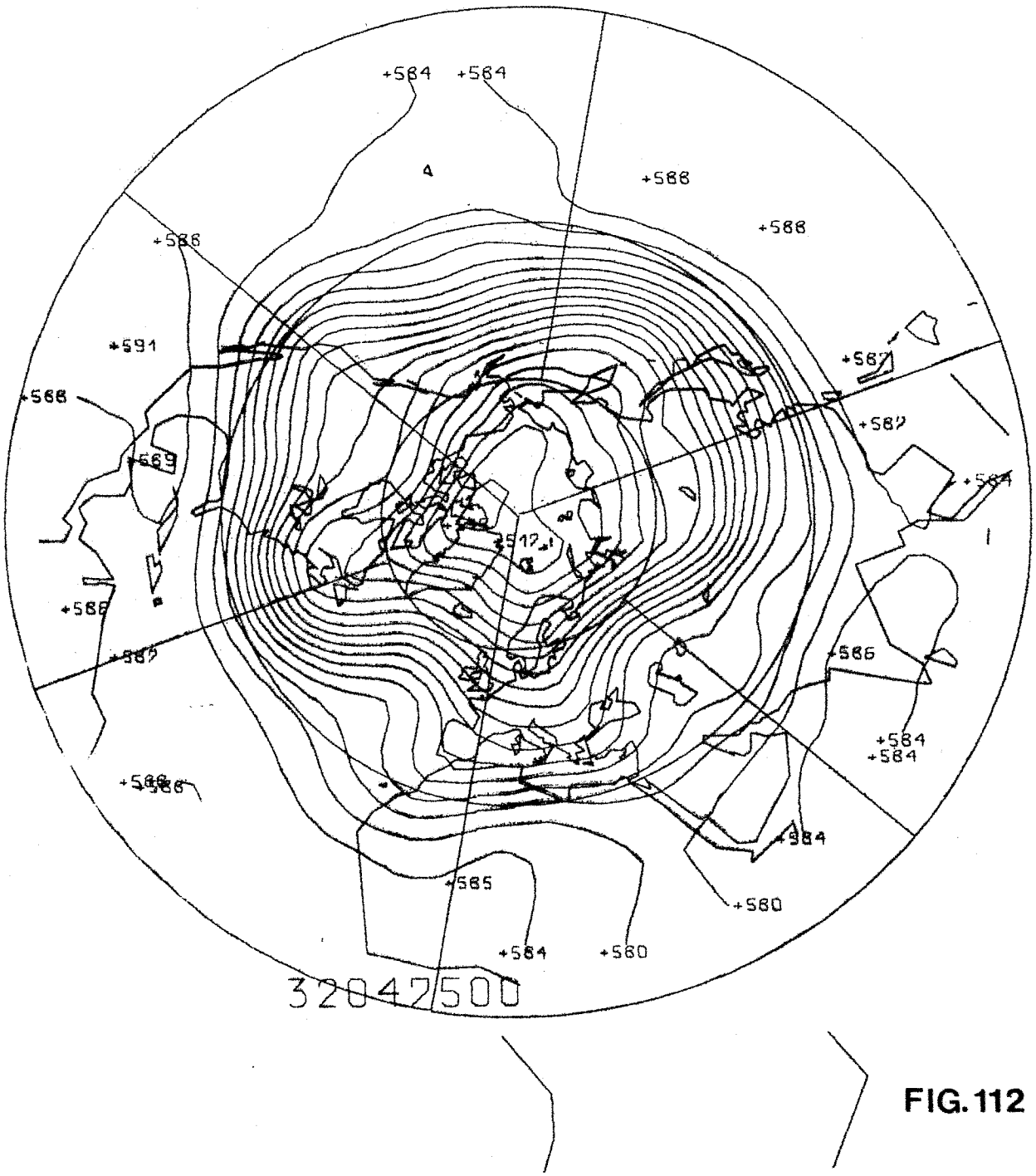


FIG. 112

$[T]_{(t)}$ 300 mb APRIL 1975

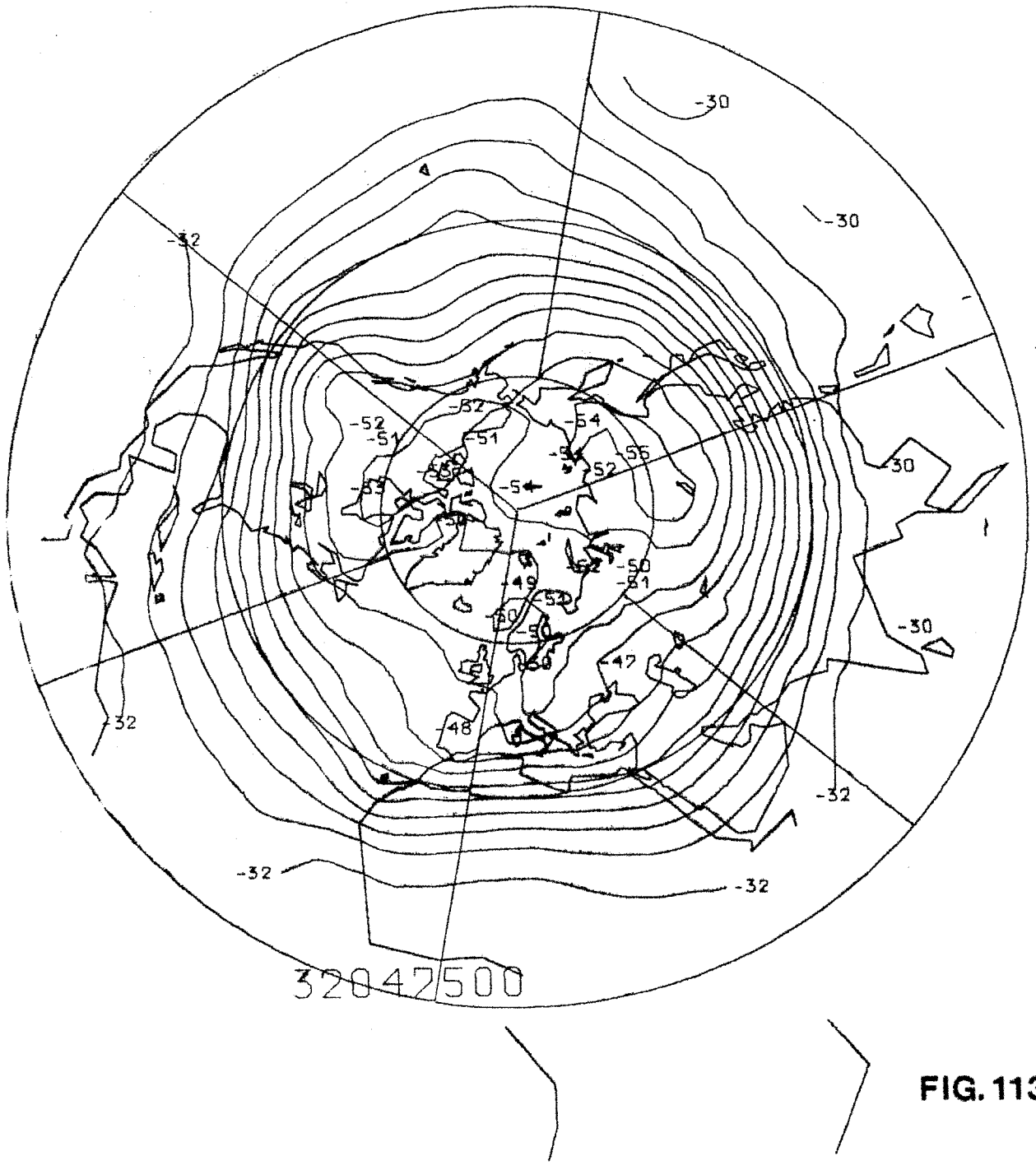


FIG. 113a

$[\Phi]_{(t)}$ 300mb APRIL 1975

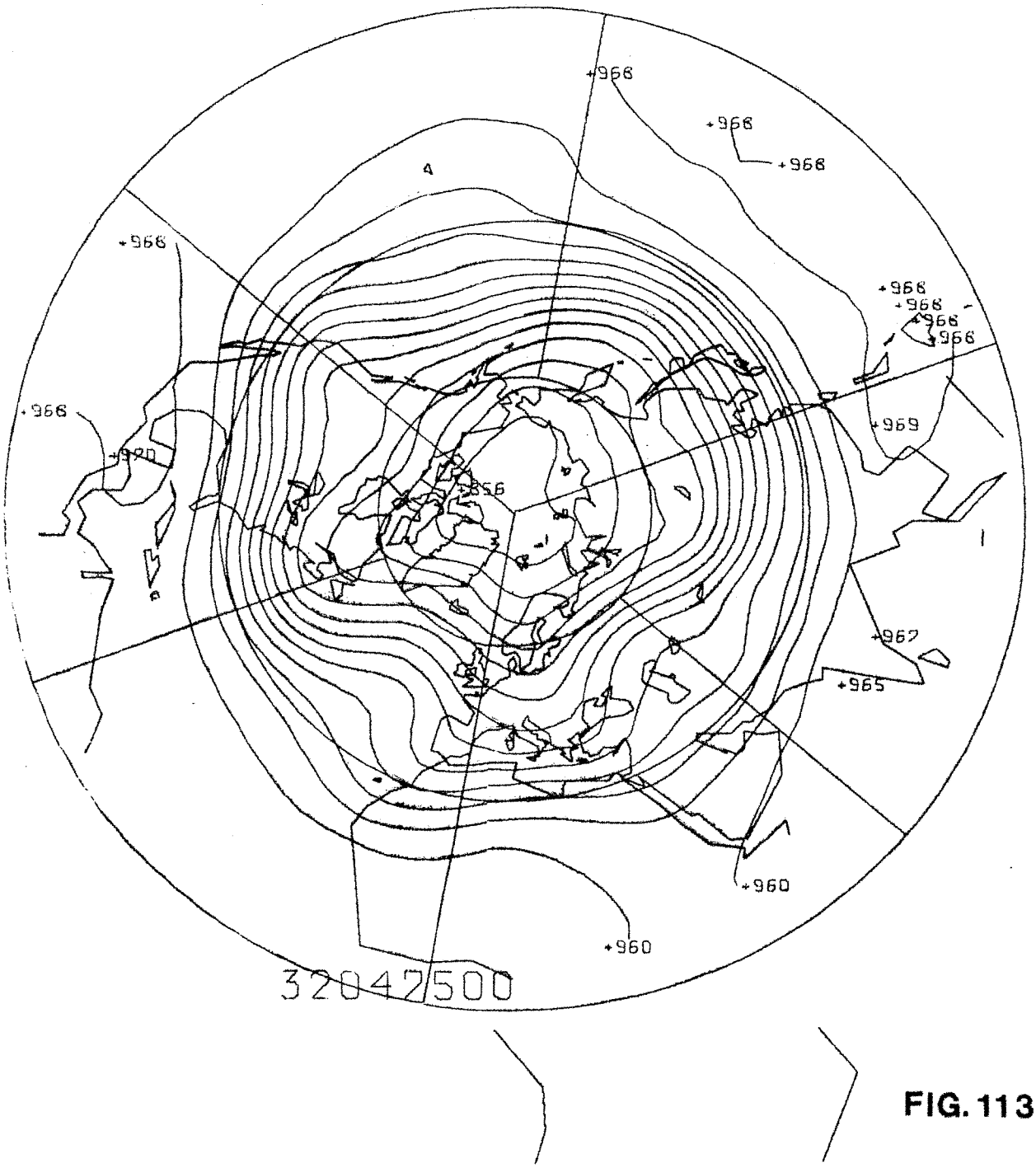


FIG. 113 b

$[T]_{(t)}$ 100 mb APRIL 1975

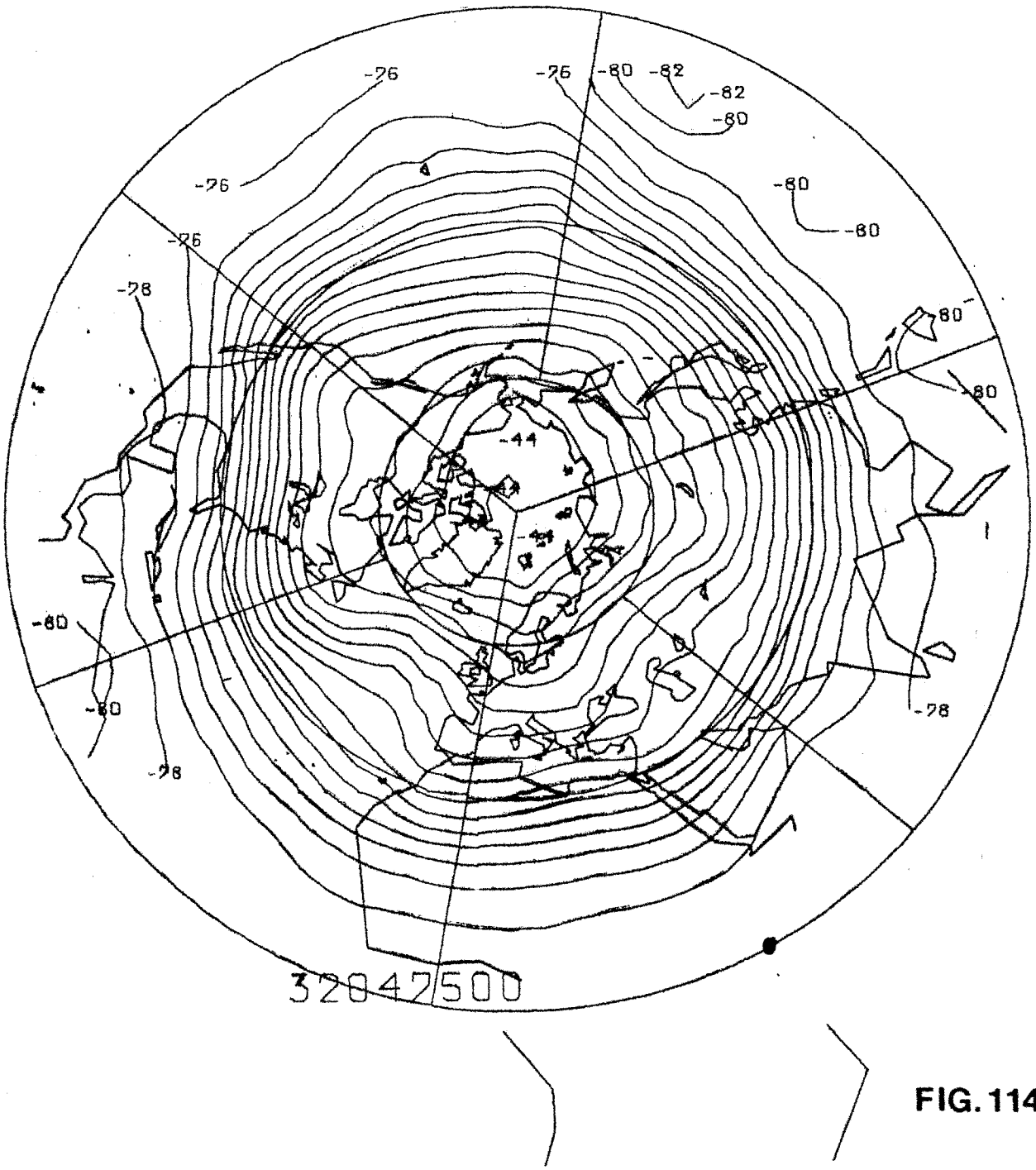


FIG. 114a

$[\phi]_{(t)}$ 100 mb APRIL 1975

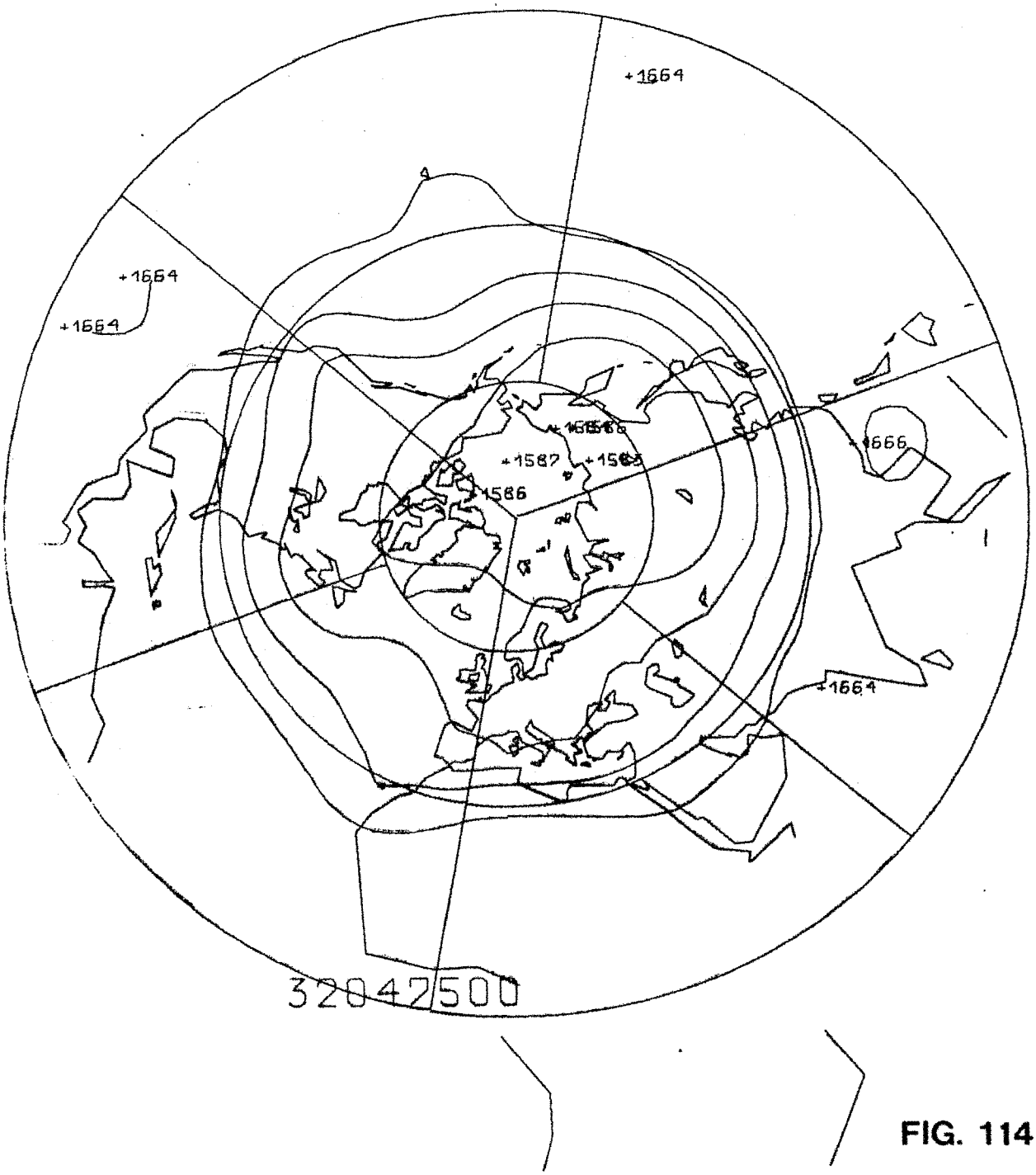


FIG. 114 b

$[T]_{(t)}$ 850mb APRIL 1976

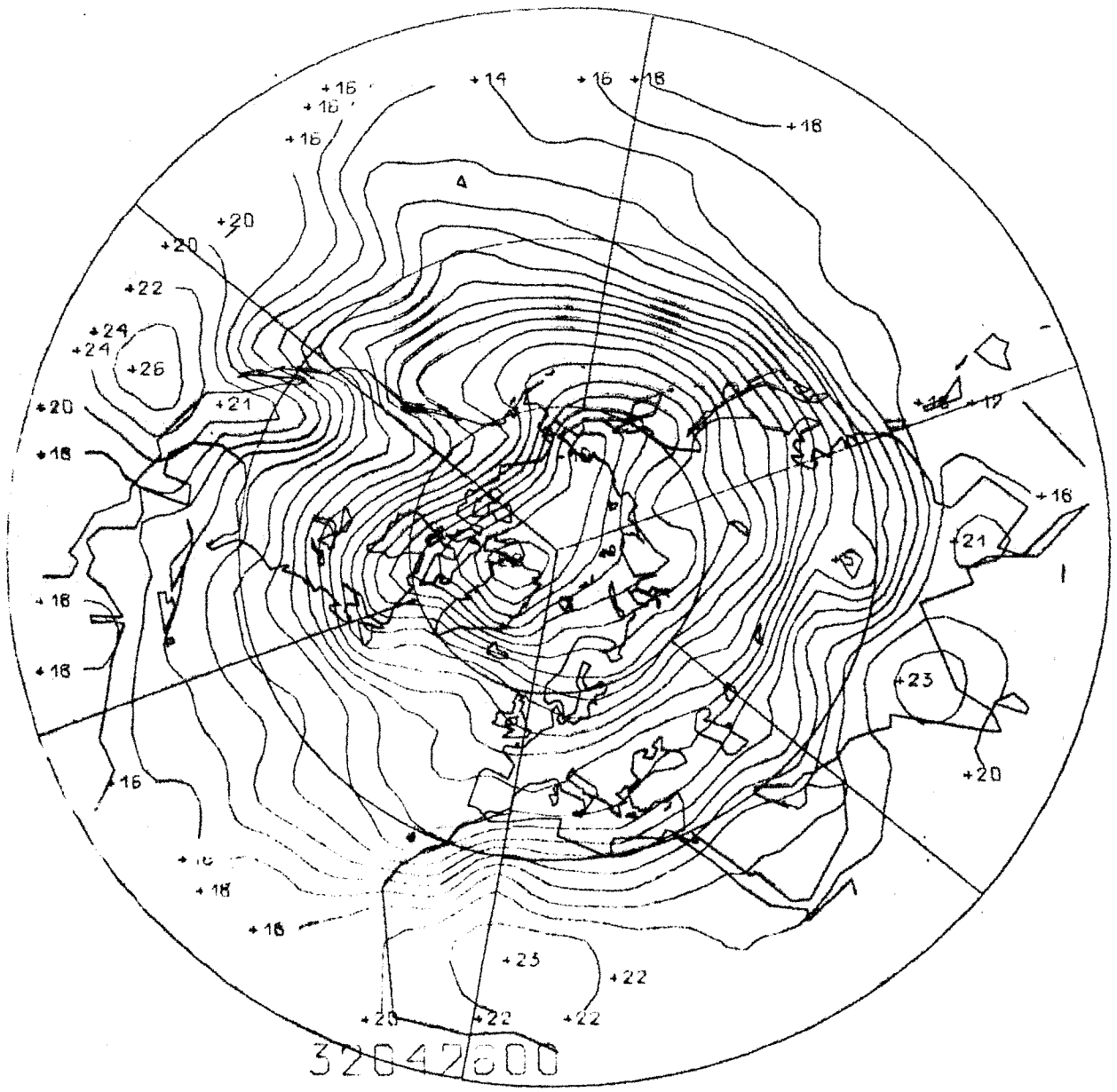


FIG. 115a

$[\phi]_{(t)}$ 850 mb APRIL 1976

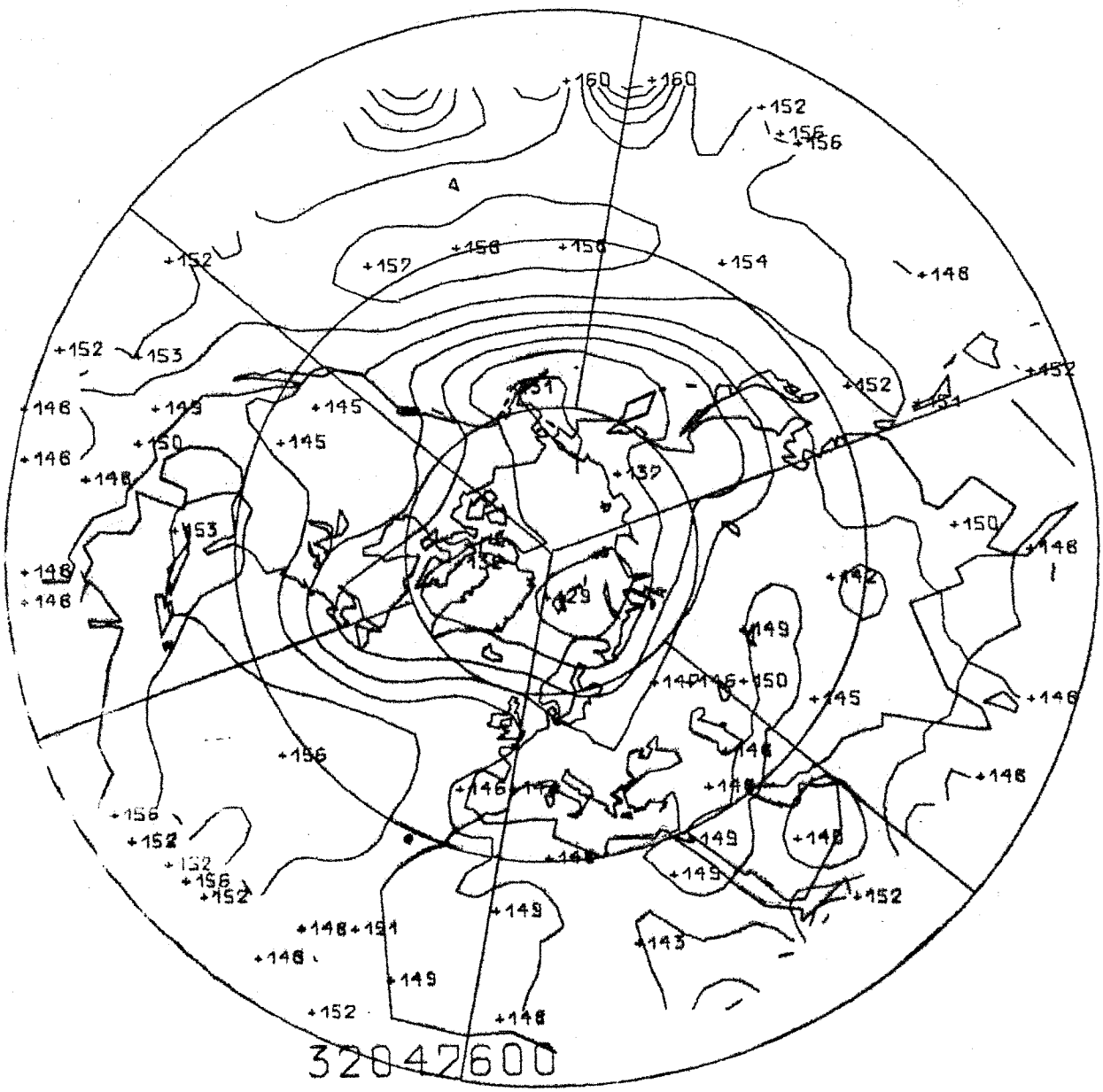


FIG. 115 b

$[\phi]_{(t)}$ 500 mb APRIL1976

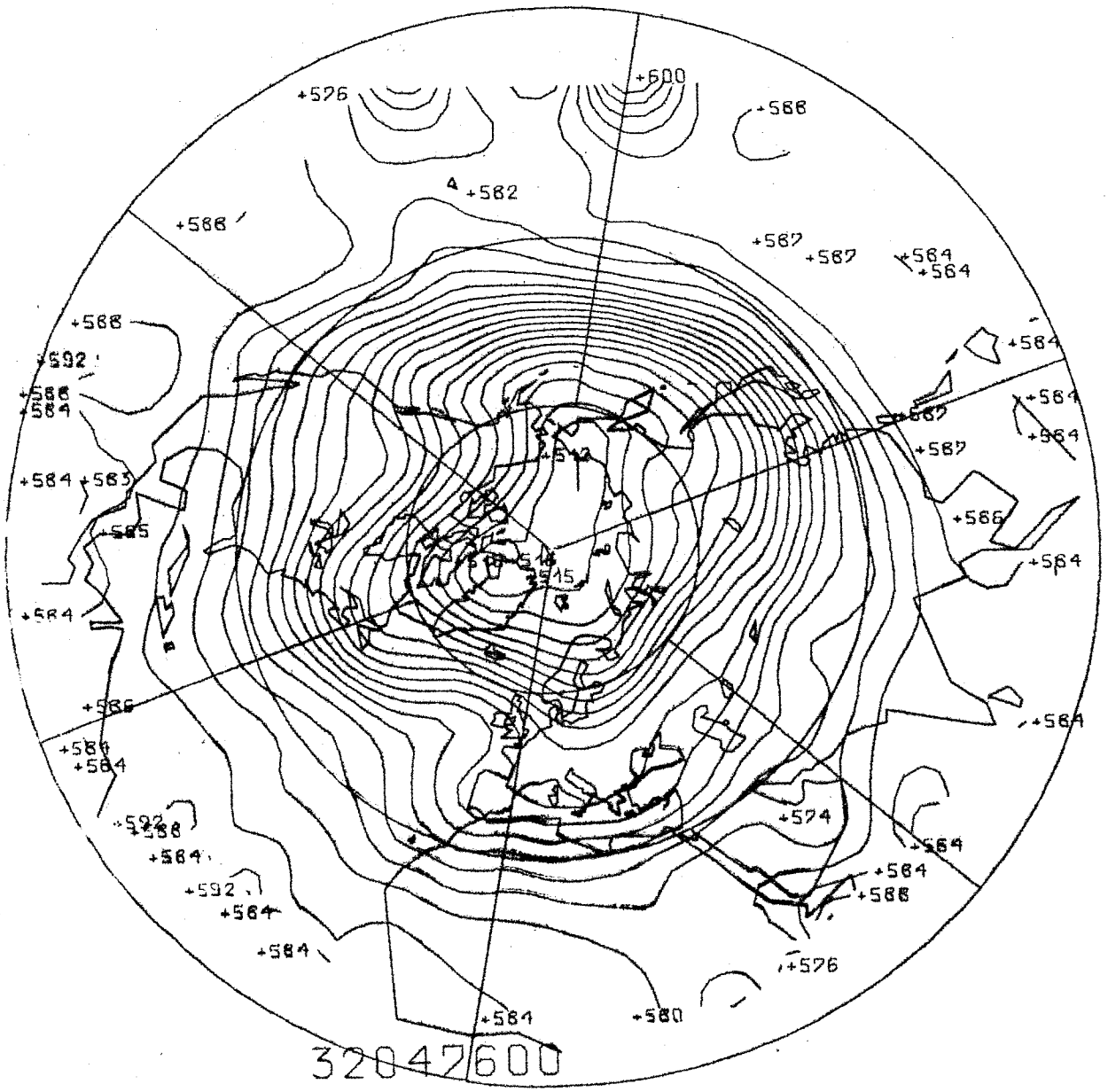


FIG. 116

$[T]_{(t)}$ 300mb APRIL 1976

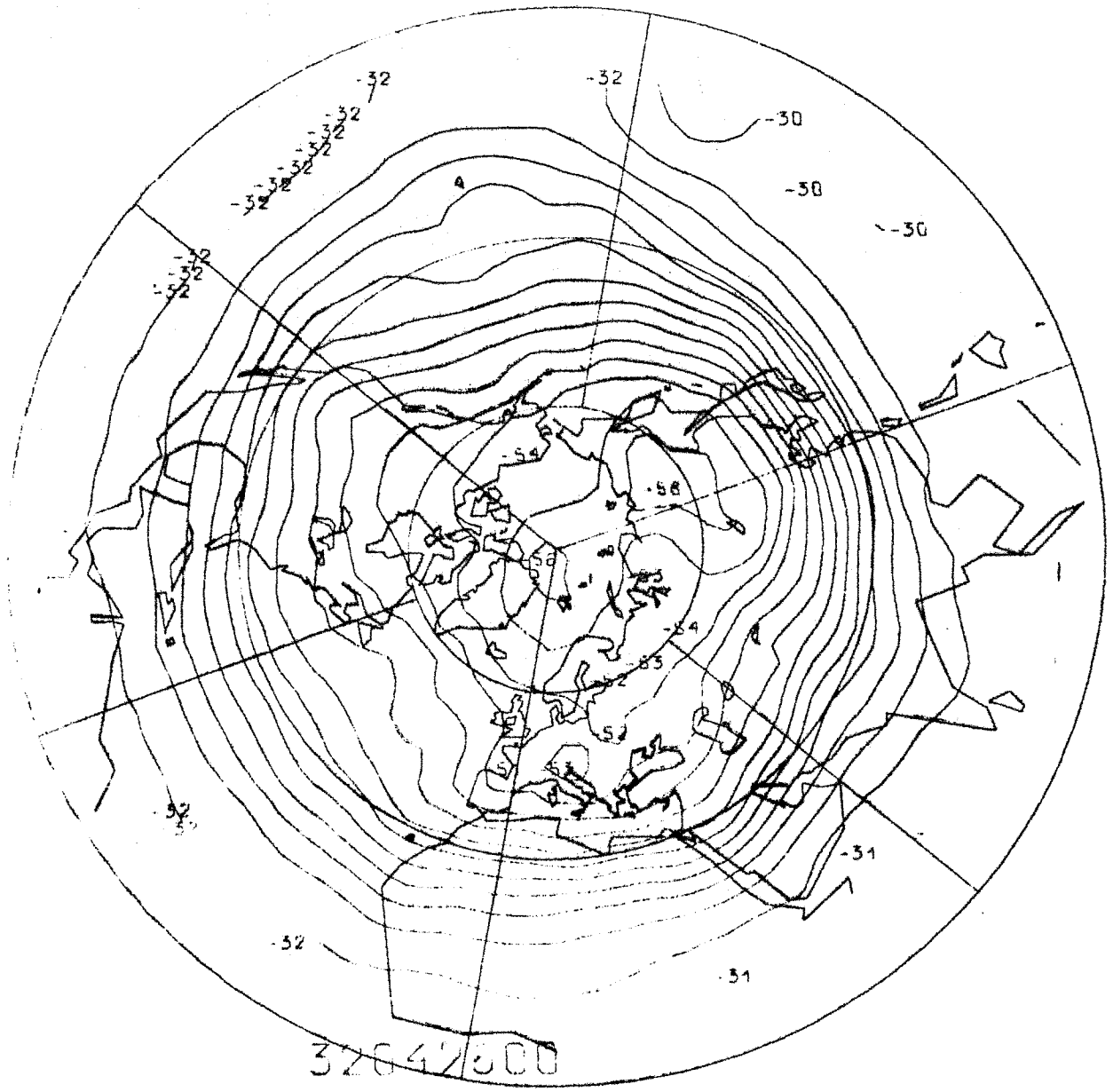


FIG.117a

$[\phi]_{(t)}$ 300mb APRIL 1976

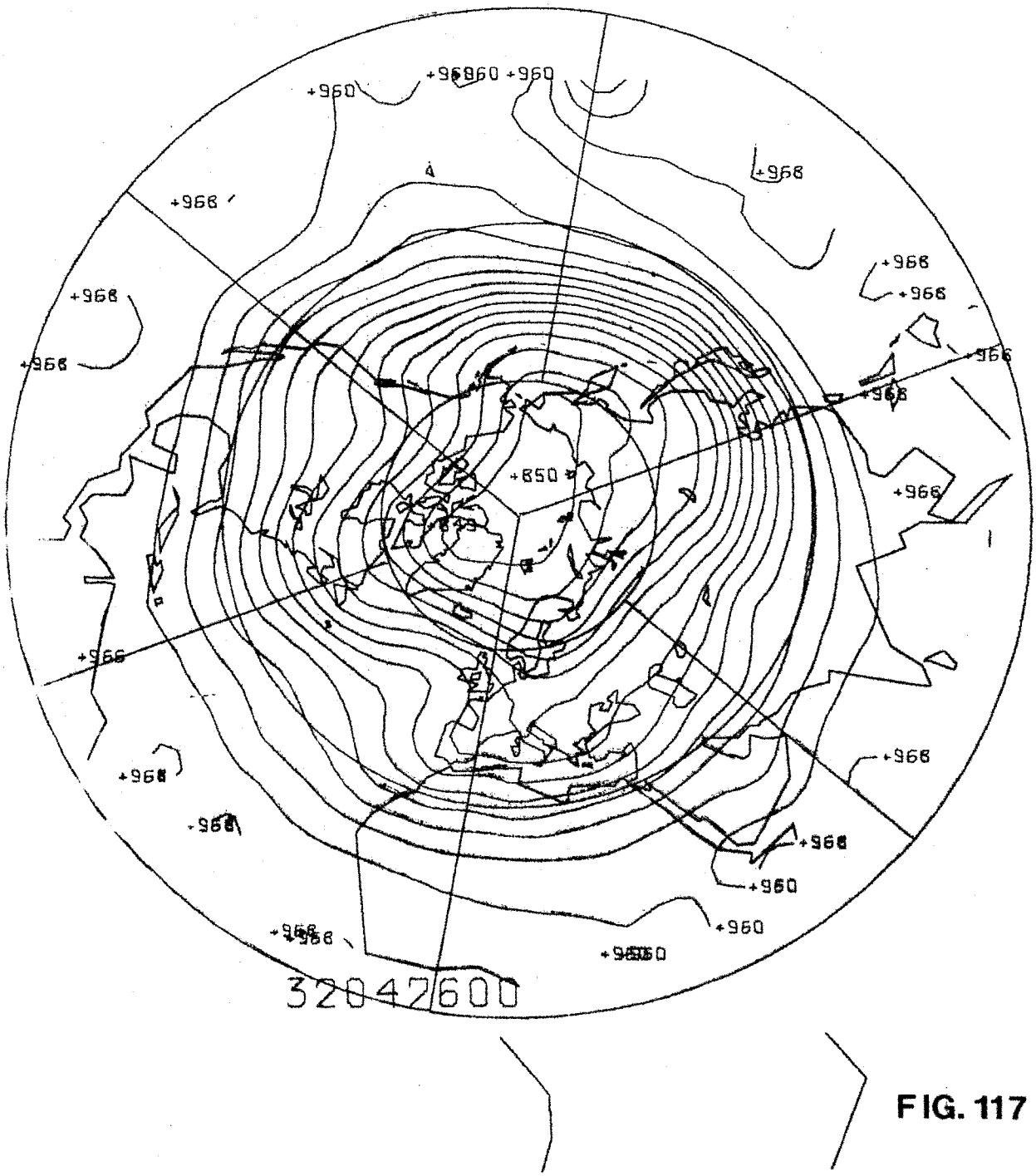
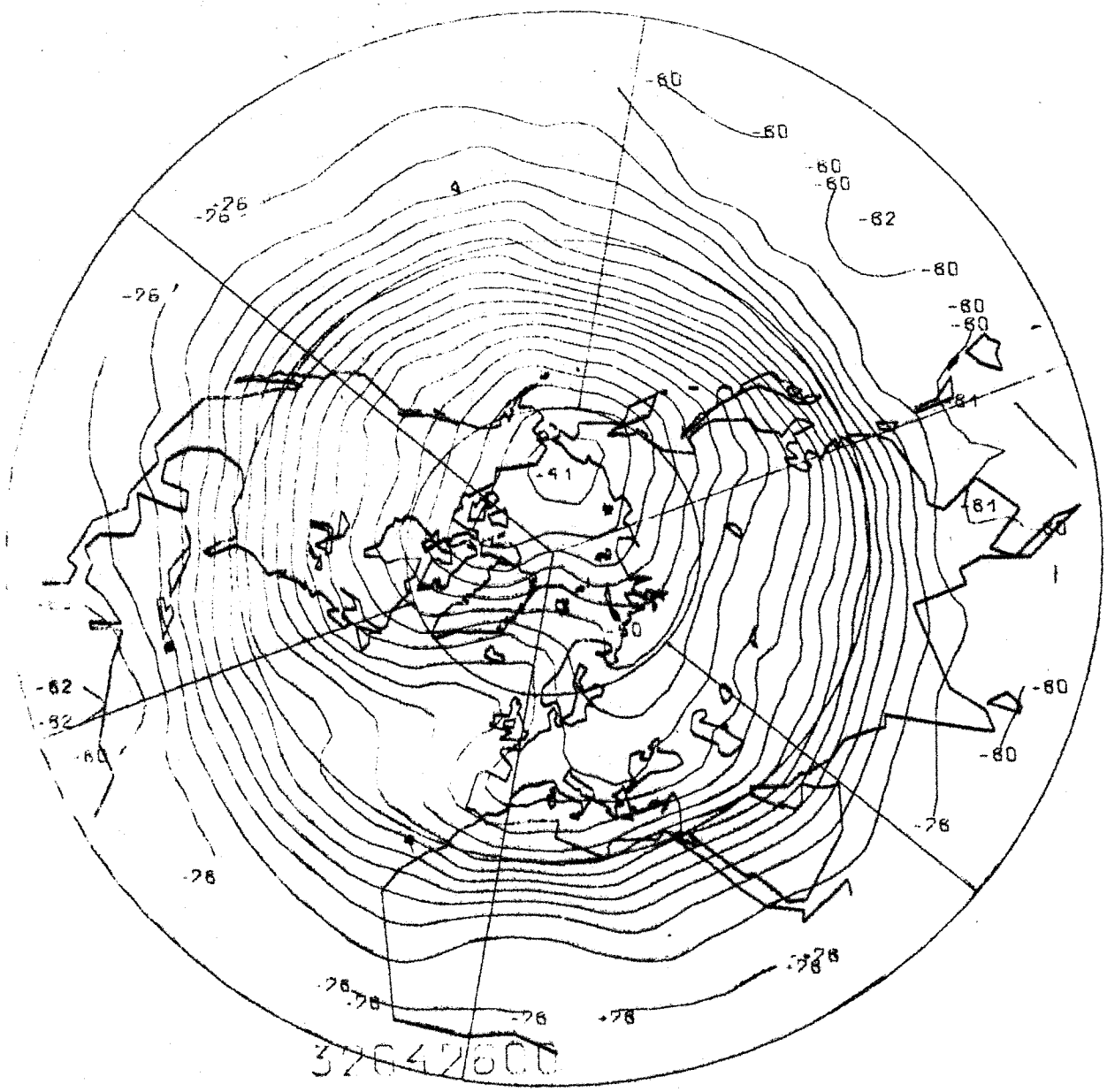


FIG. 117 b

$[T]_{(t)}$ 100mb APRIL 1976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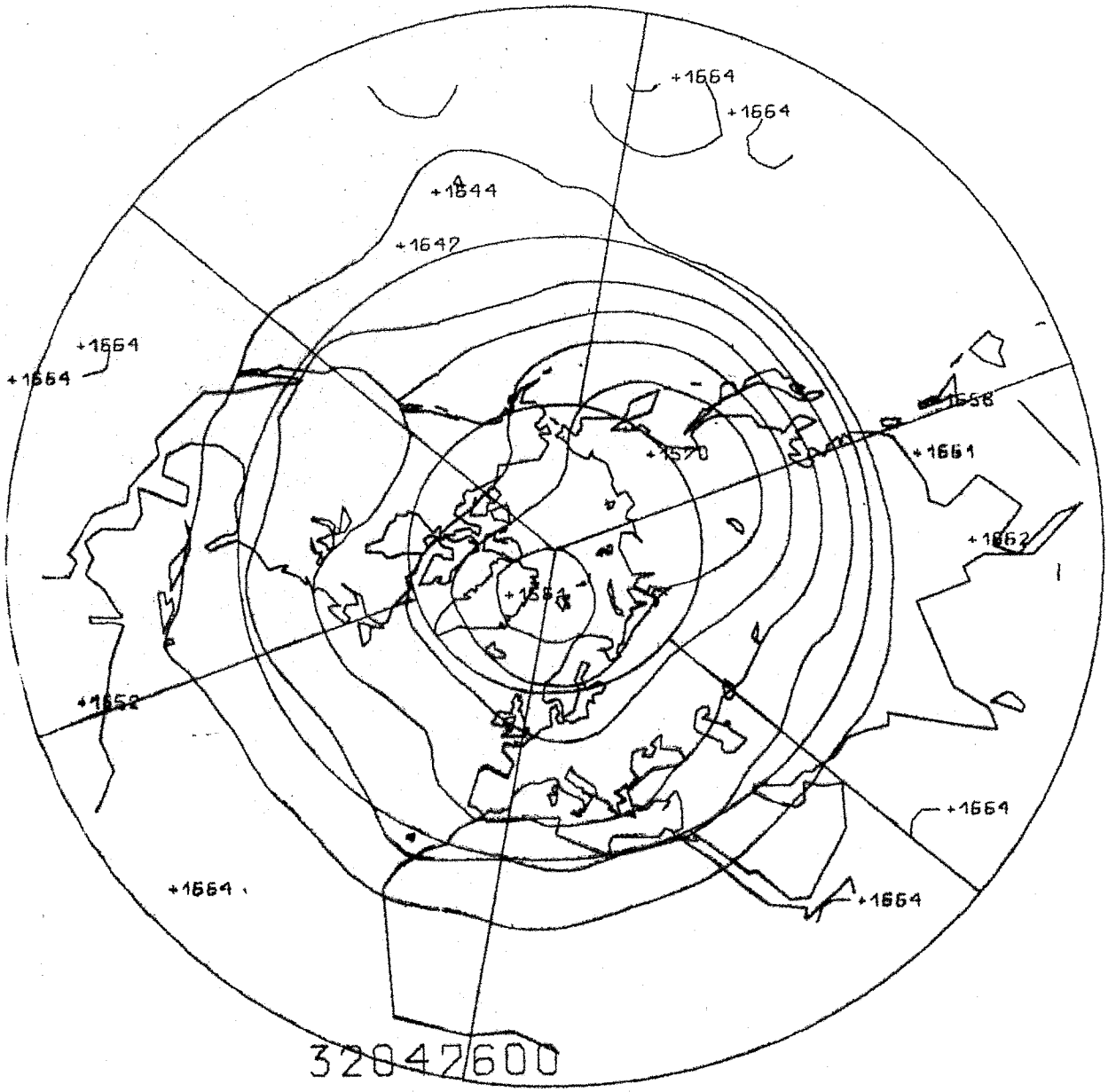
$[\phi]_{(t)}$ 100mb APRIL 1976



32047600

FIG.118b

$[T]_{(t)}$ 850mb OCT. 1967

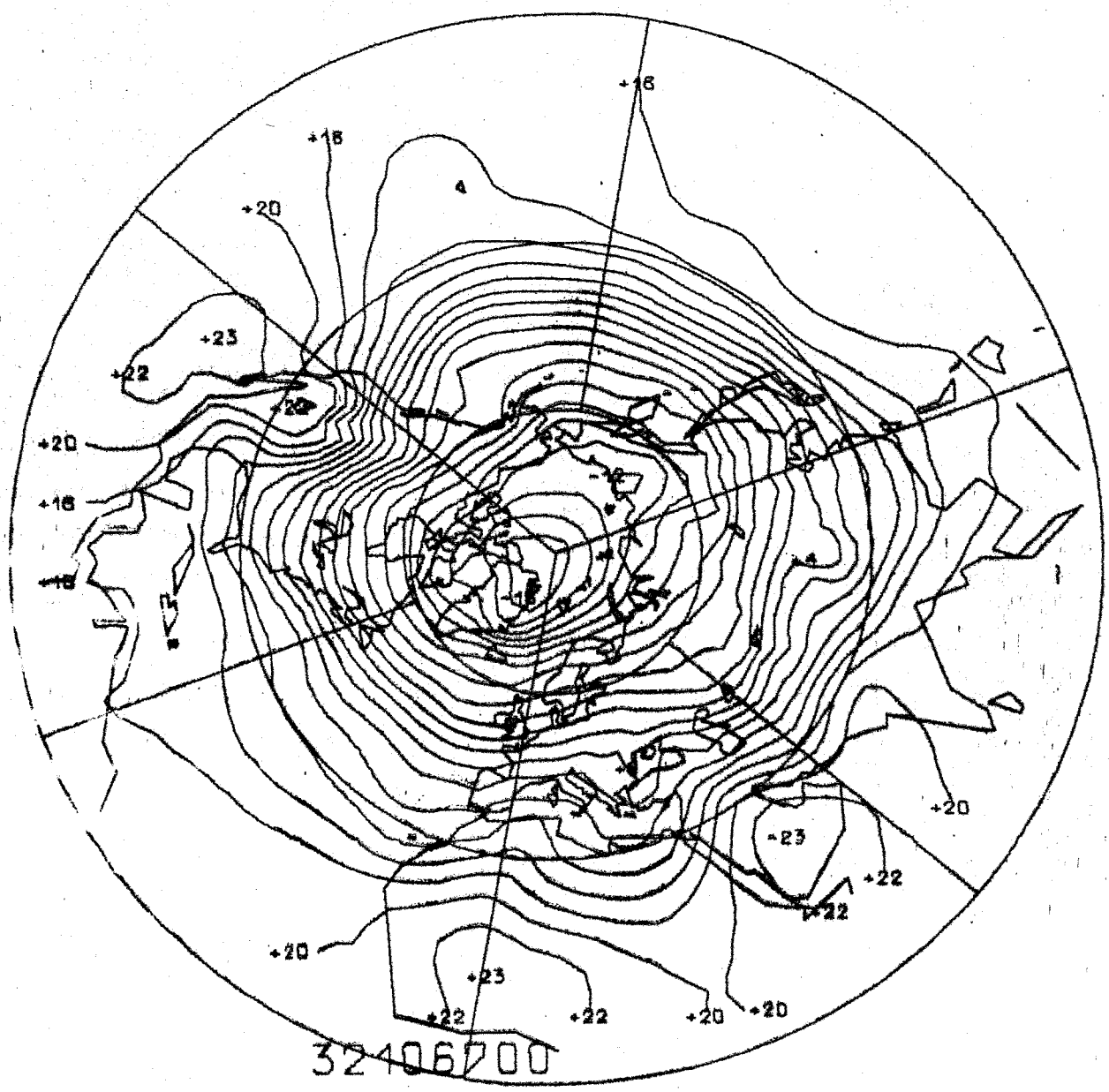


FIG.119 a

$[\phi]_{(t)}$ 850mb OCT. 1967

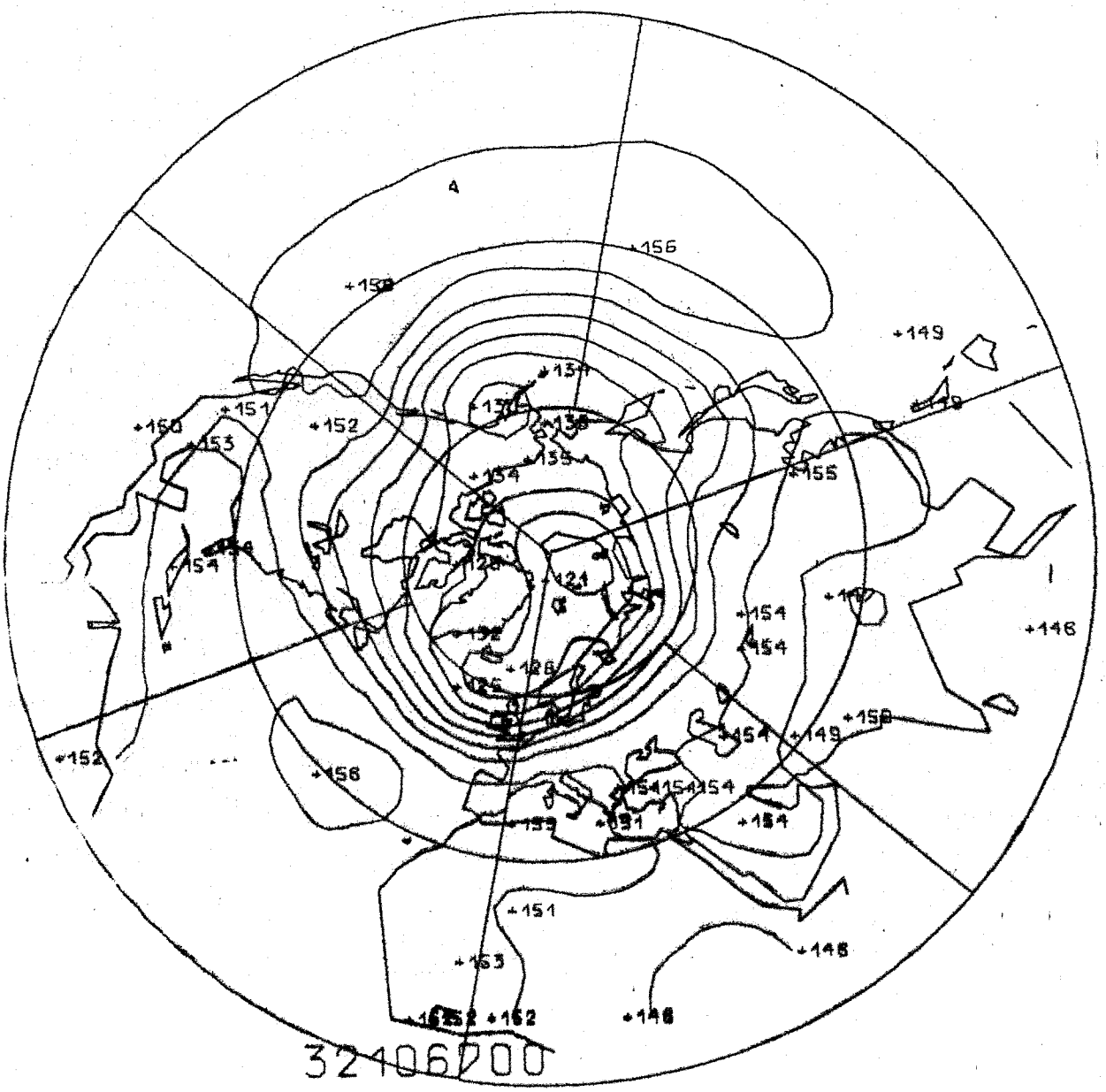


FIG. 119 b

$[\phi]_{(t)}$ 500mb OCT. 1967

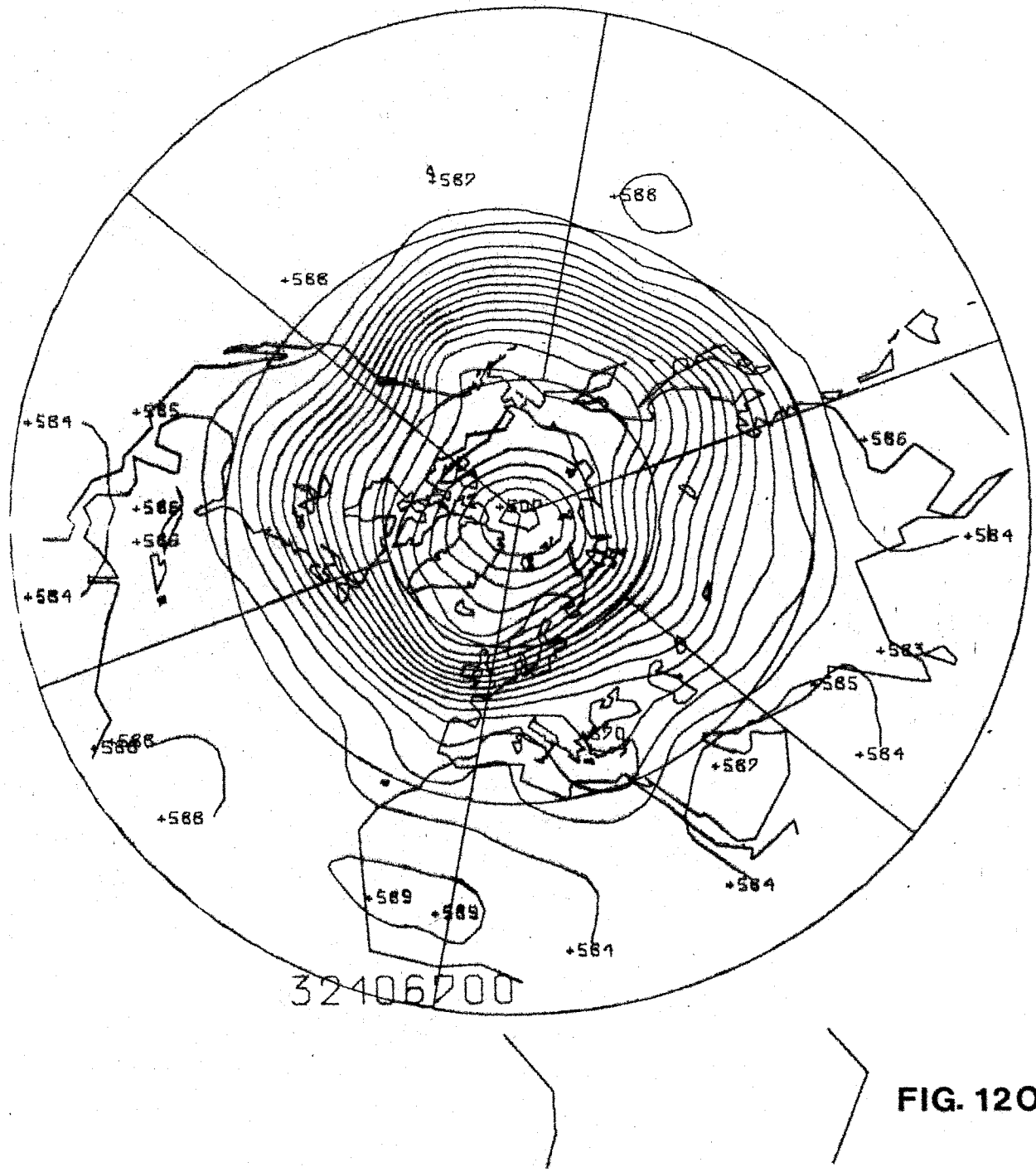


FIG. 120

$[T]_{(t)}$ 300mb OCT. 1967

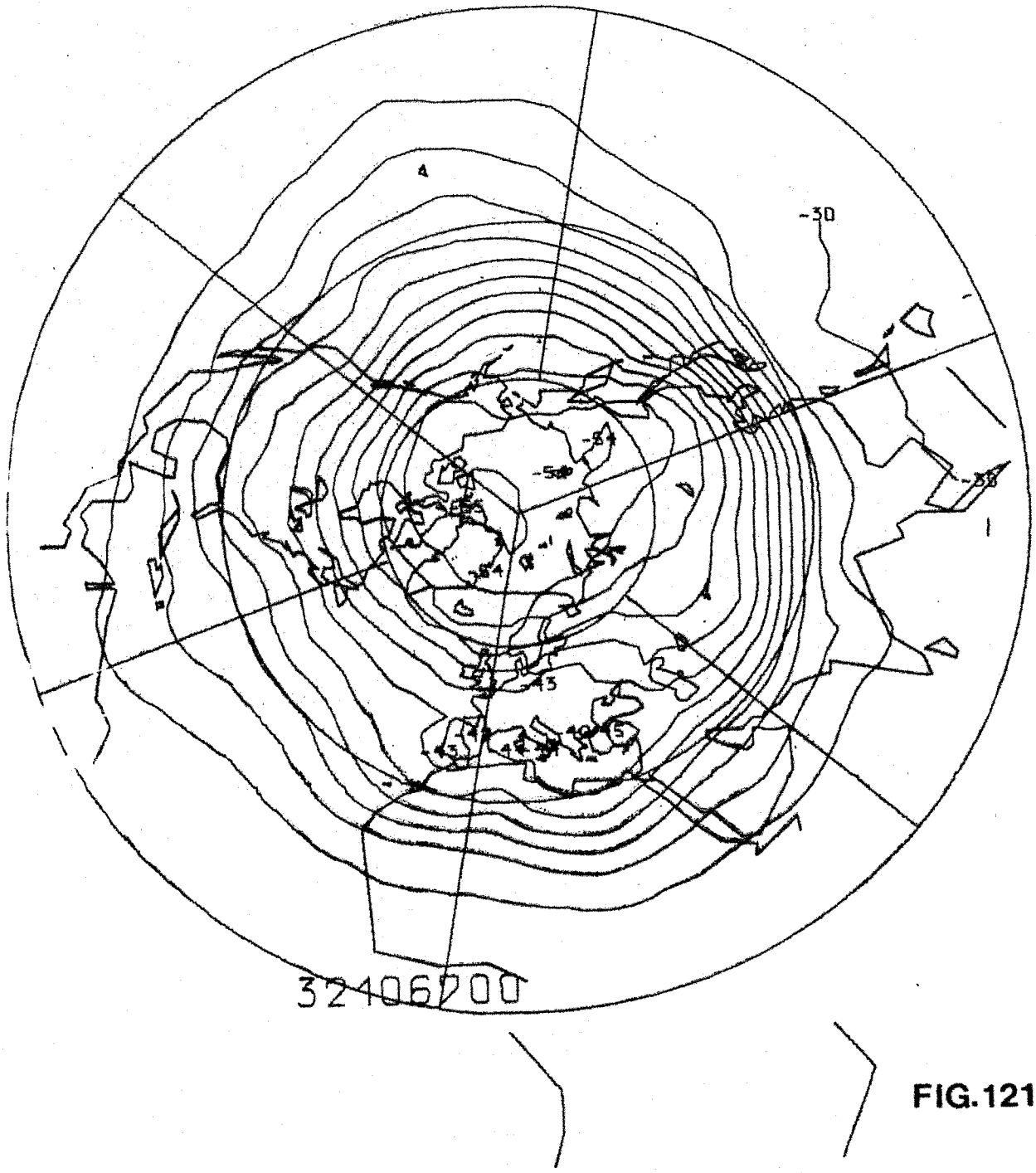


FIG. 121a

$[\phi]_{(t)}$ 300mb OCT. 1967

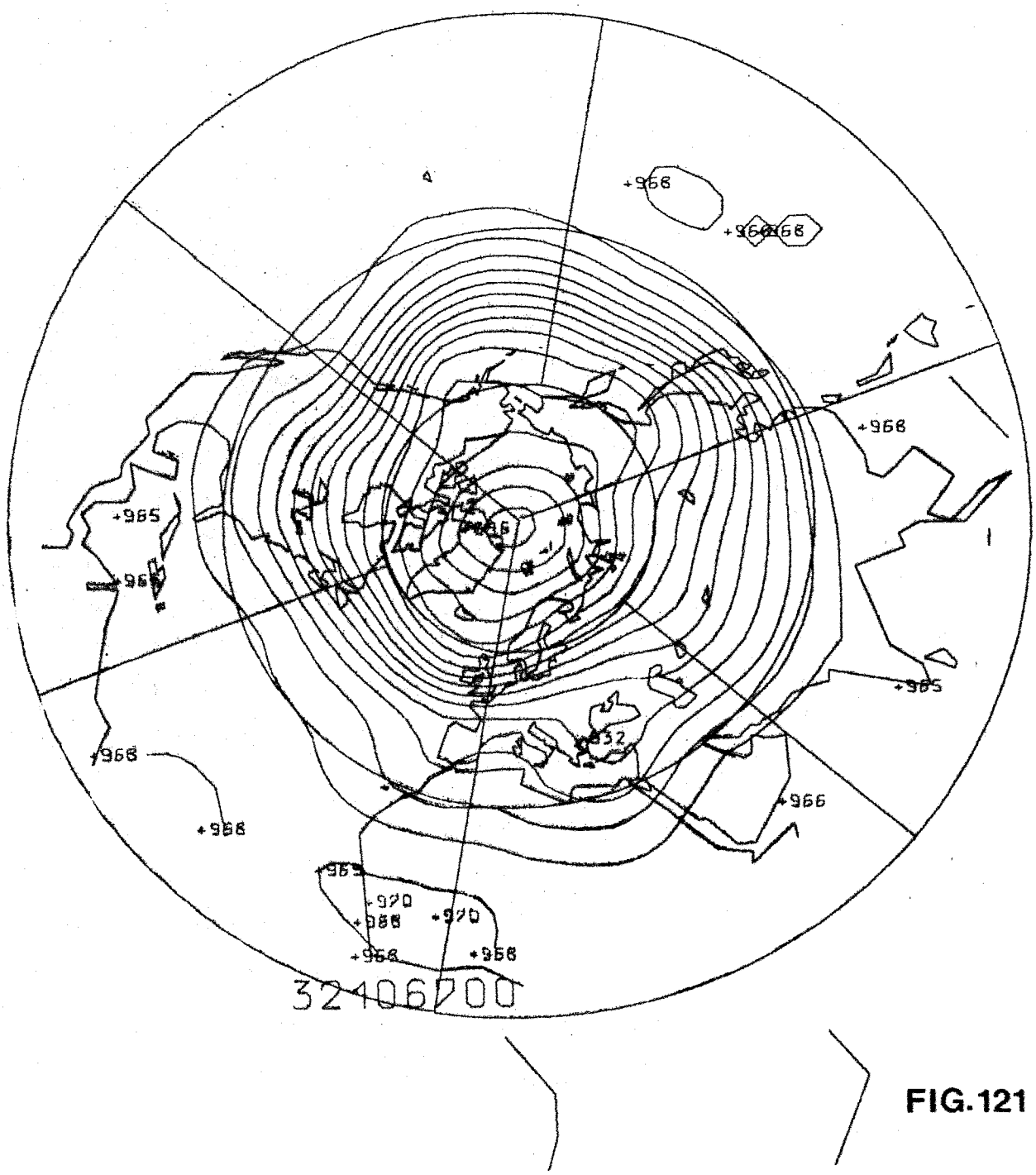
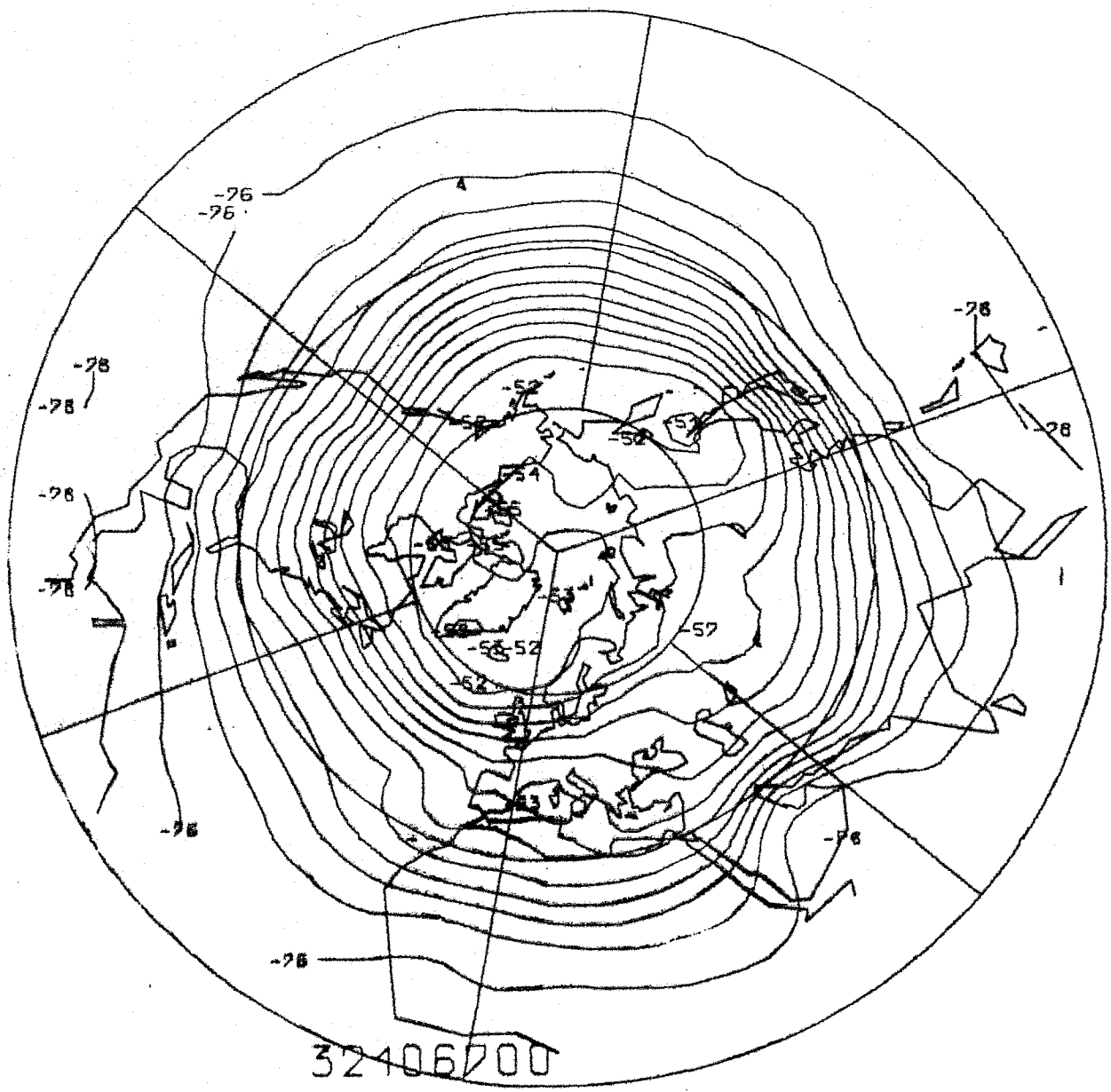


FIG. 121 b

$[T]_{(t)}$ 100 mb OCT. 1967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$[\Phi]_{(t)}$ 100 mb OCT. 1967

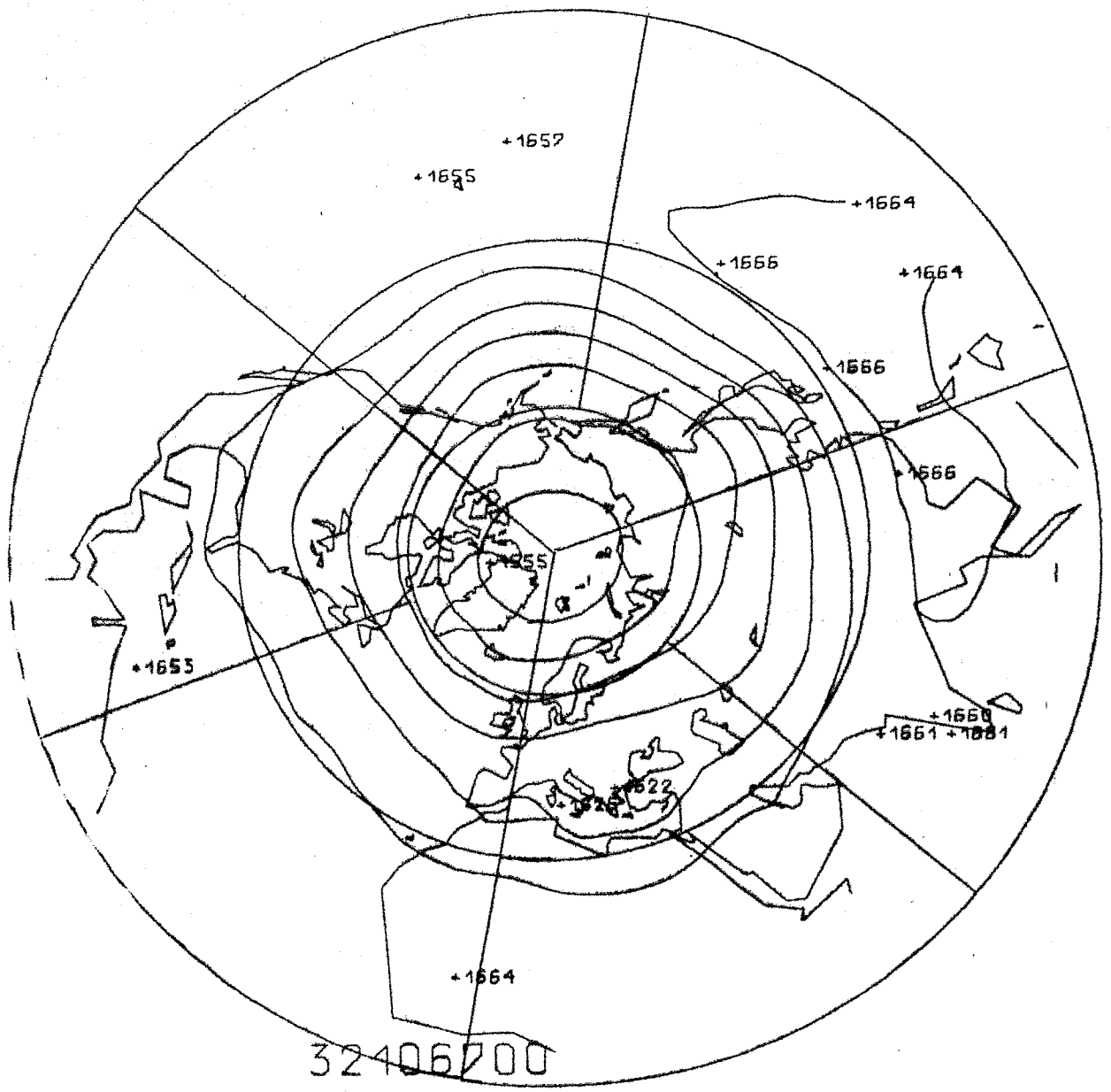


FIG. 122 b

$[T]_{(t)}$ 850mb OCT. 1968

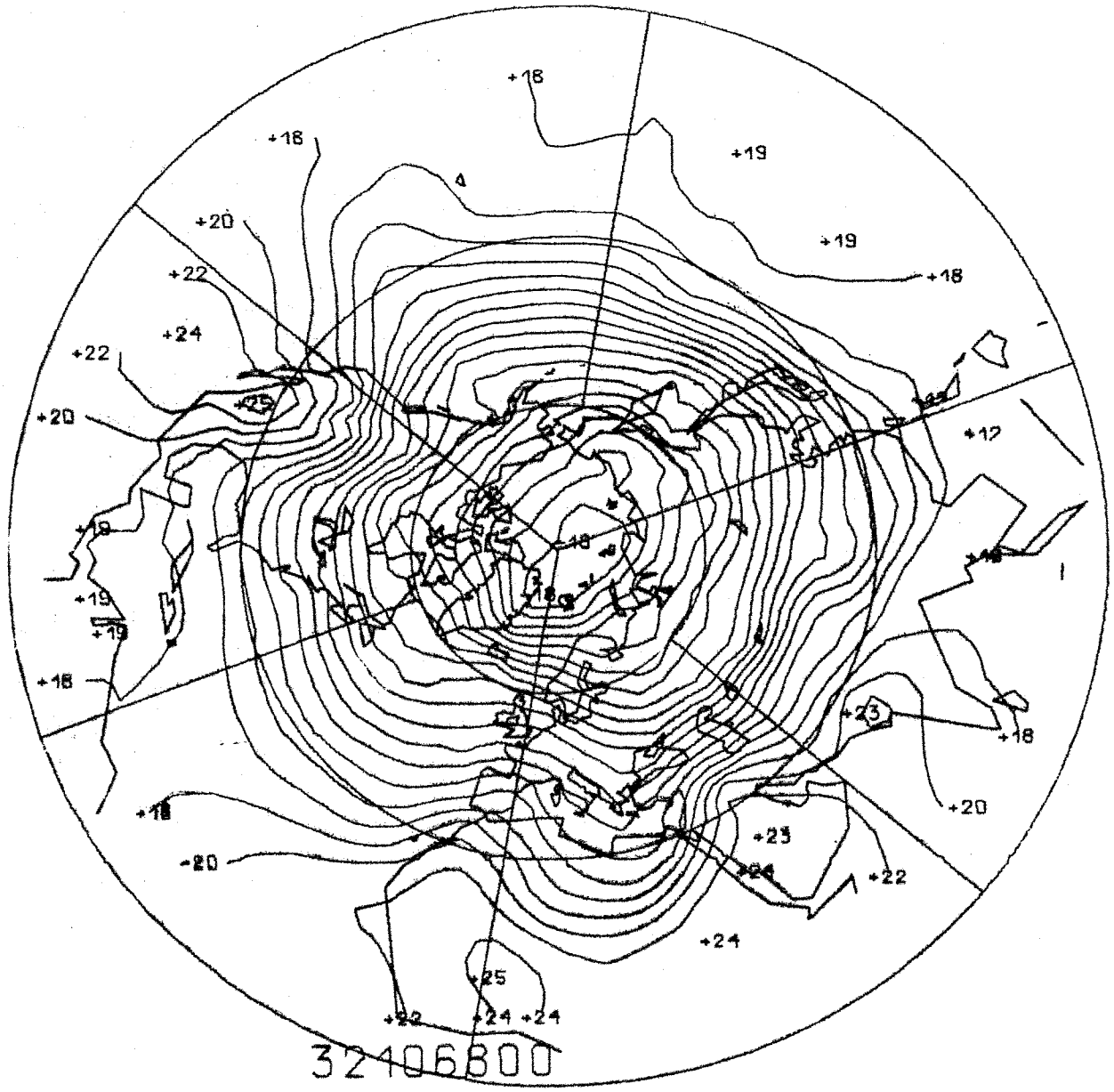


FIG. 123 a

$[\phi]_{(t)}$ 850mb OCT. 1968

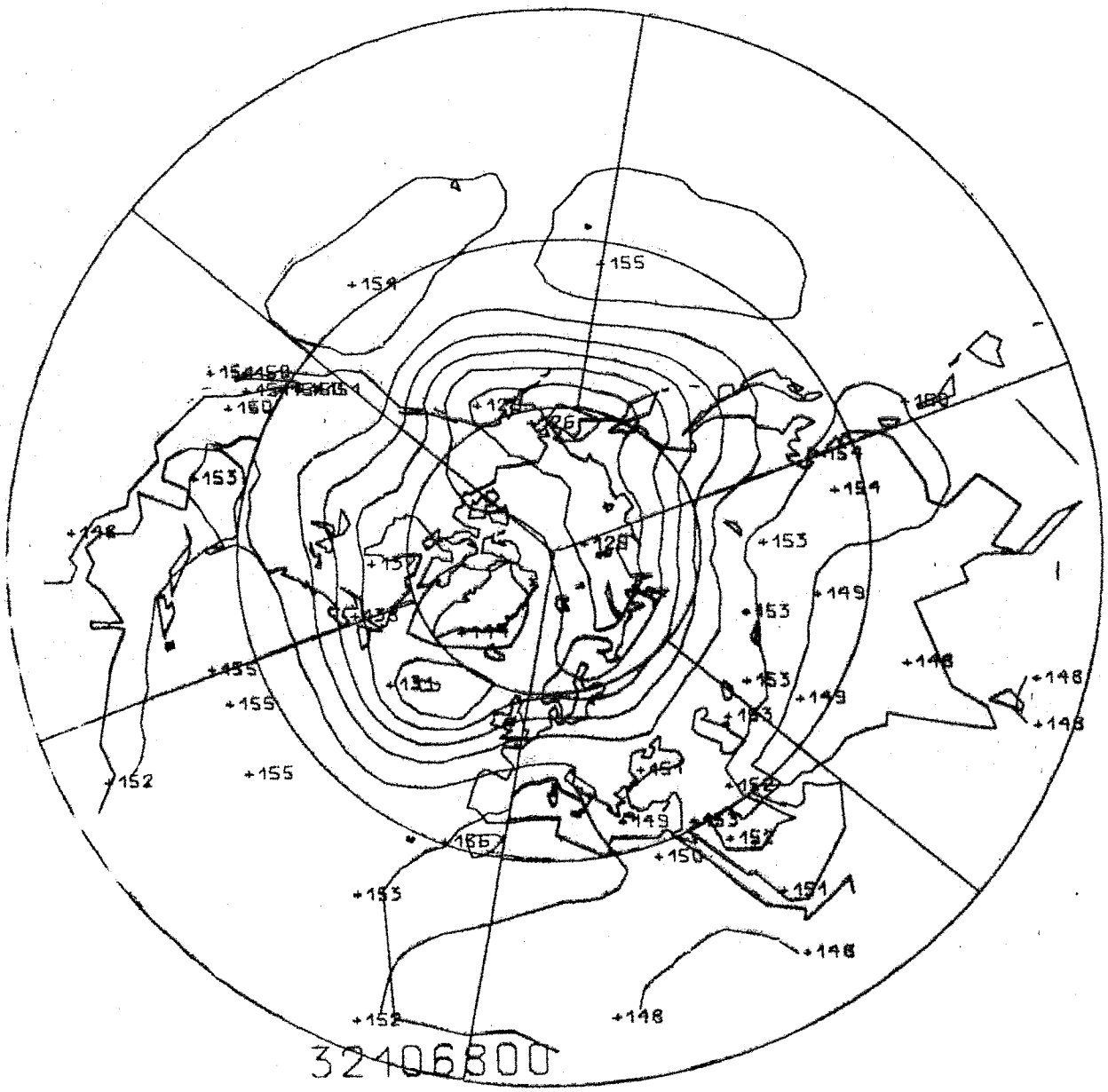


FIG. 123 b

$[\phi]_{(t)}$ 500mb OCT. 1968

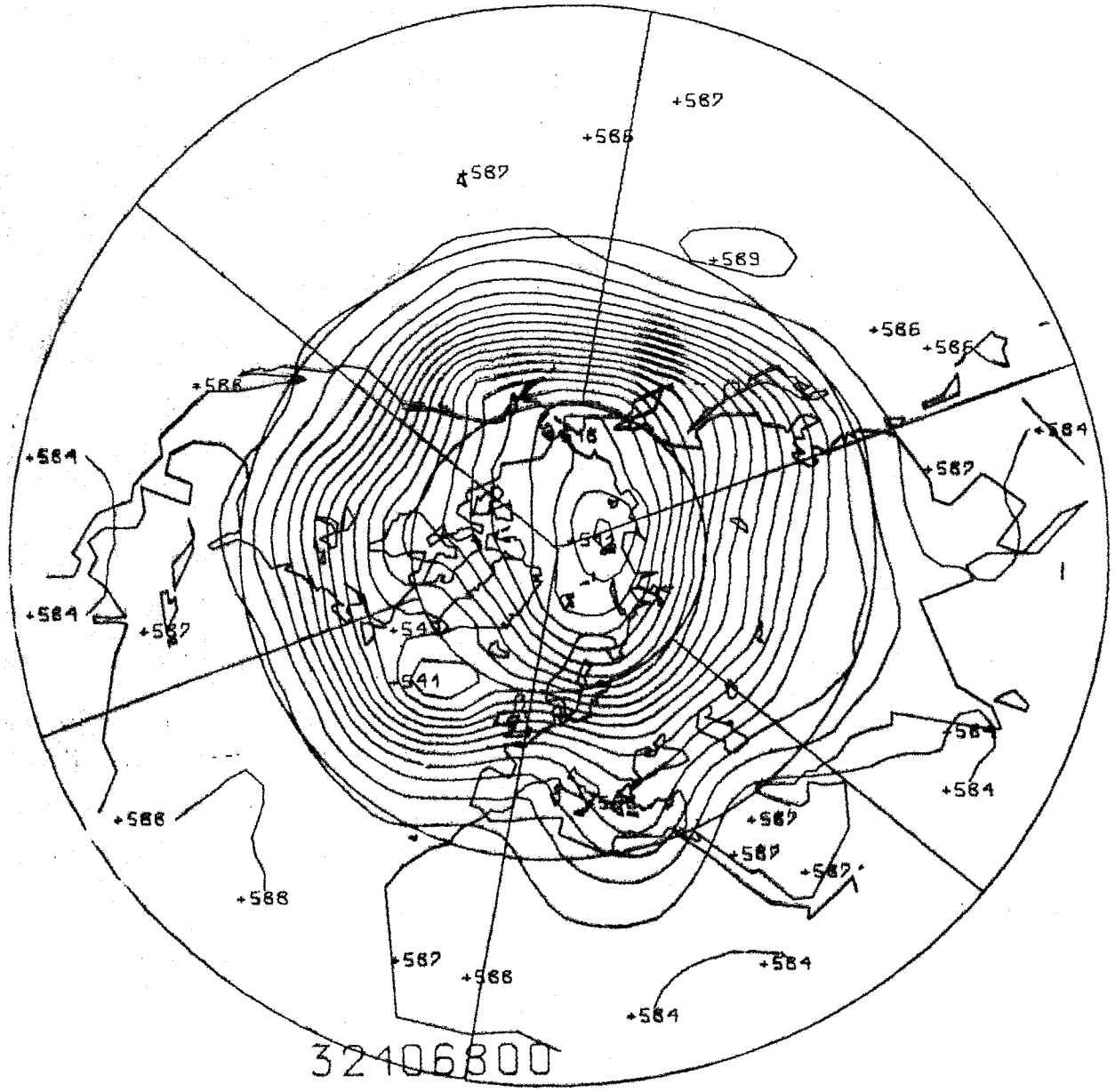


FIG. 124

$[T]_{(t)}$ 300 mb OCT. 1968

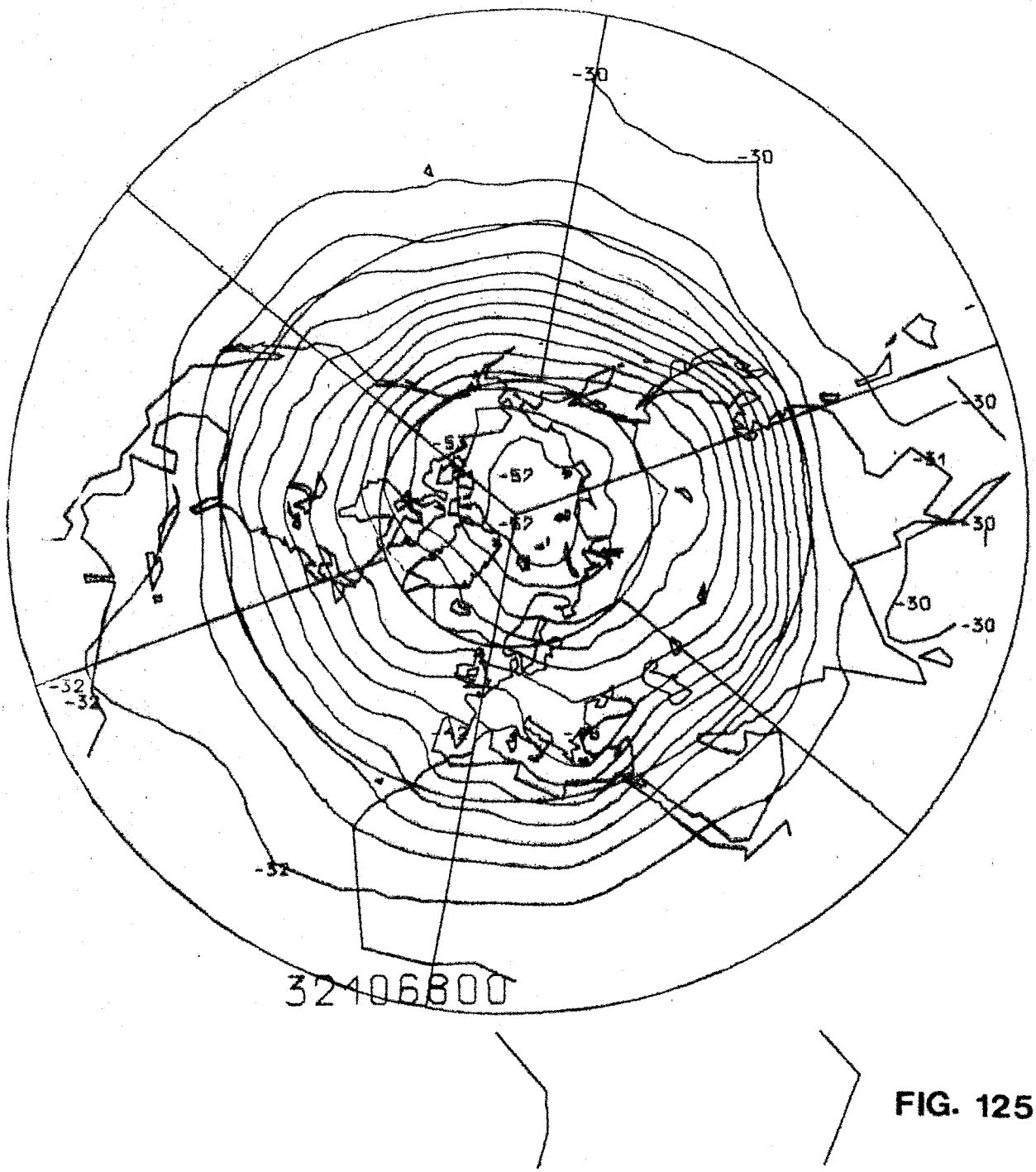
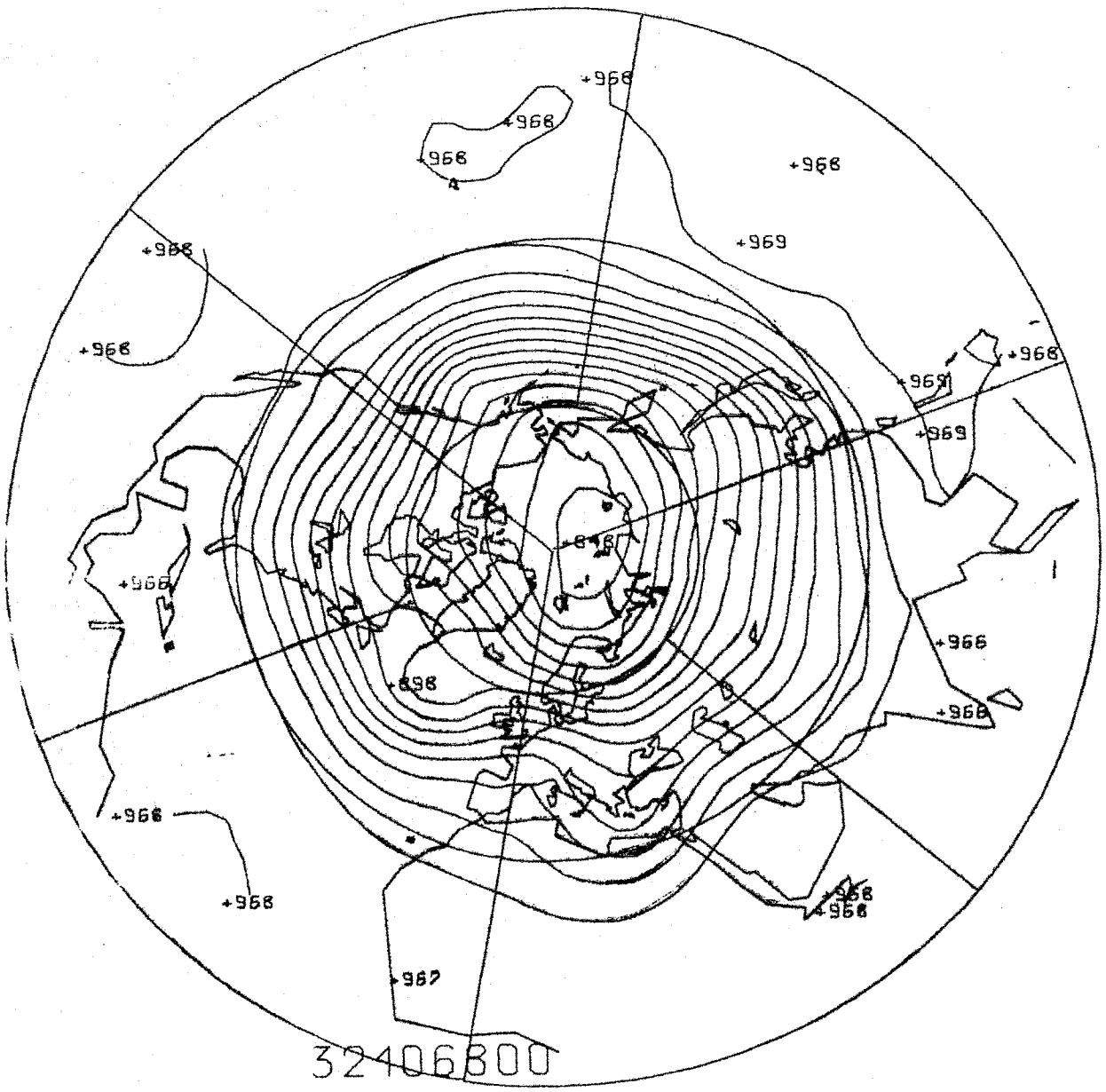


FIG. 125 a

$[\phi]_{(t)}$ 300 mb OCT. 1968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$[T]_{(t)}$ 100 mb OCT. 1968

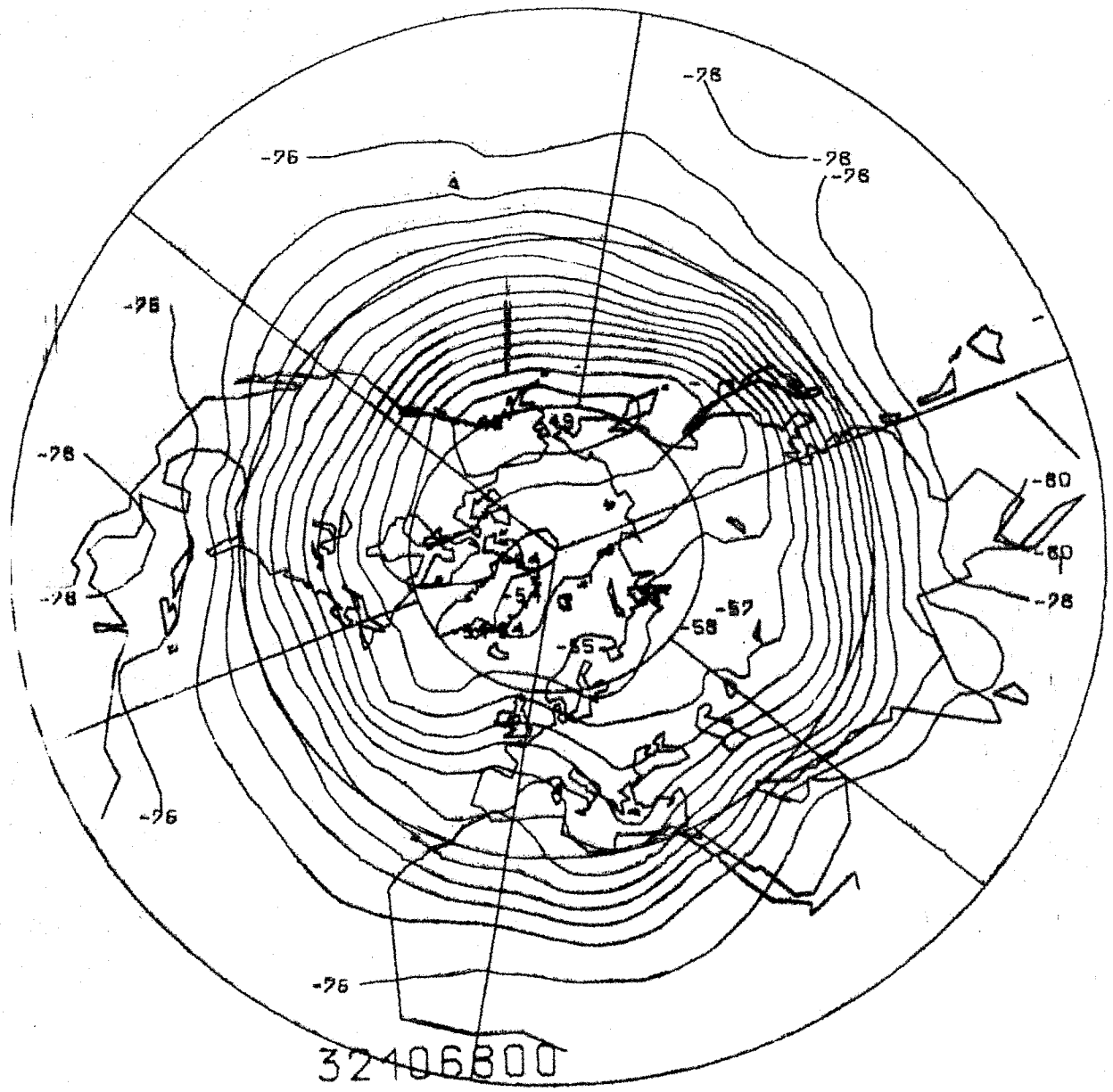


FIG. 126 a

$[\phi]_{(t)}$ 100 mb OCT. 1968

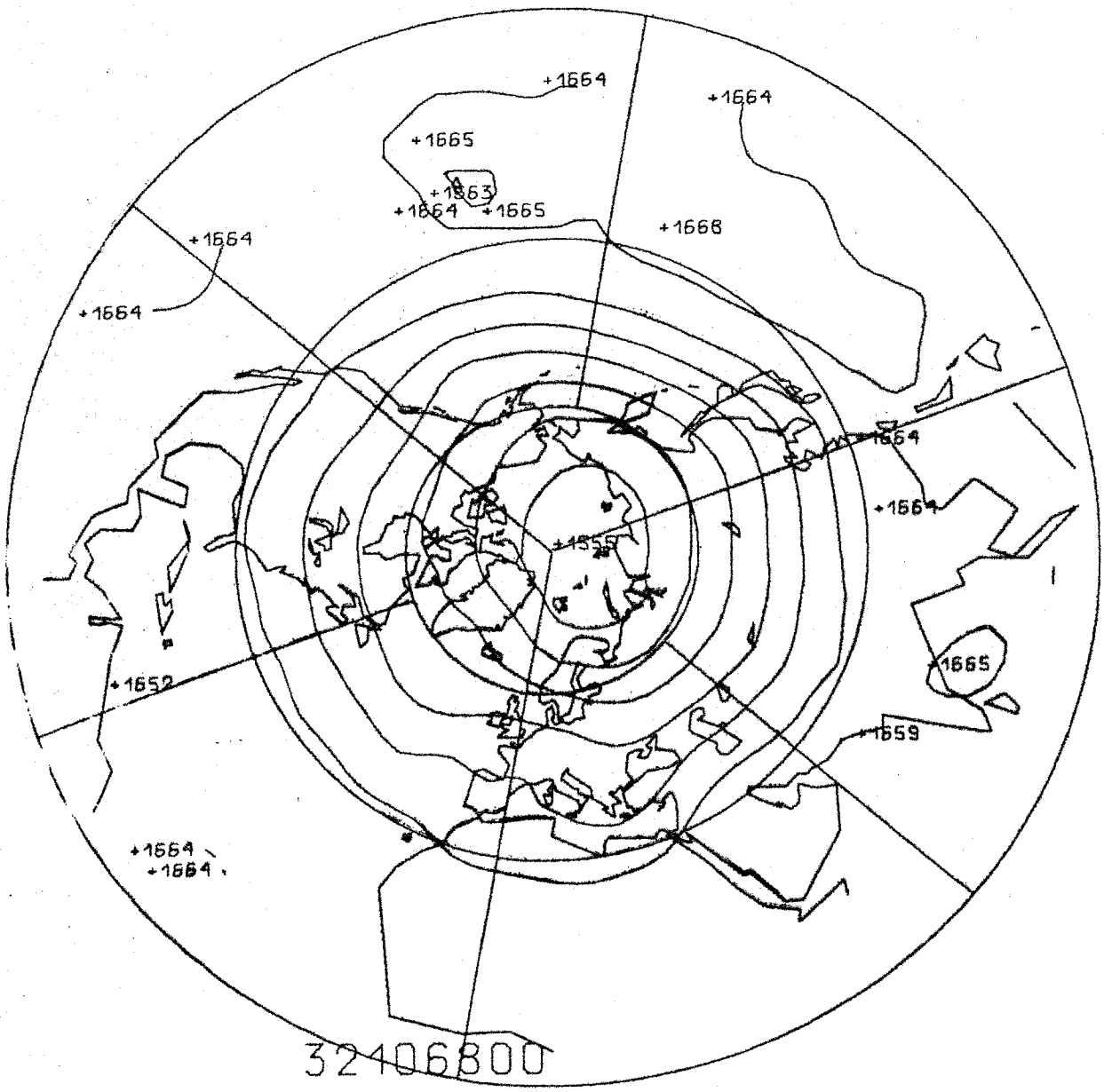


FIG.126 b

$[T]_{(t)}$ 850mb OCT. 1969

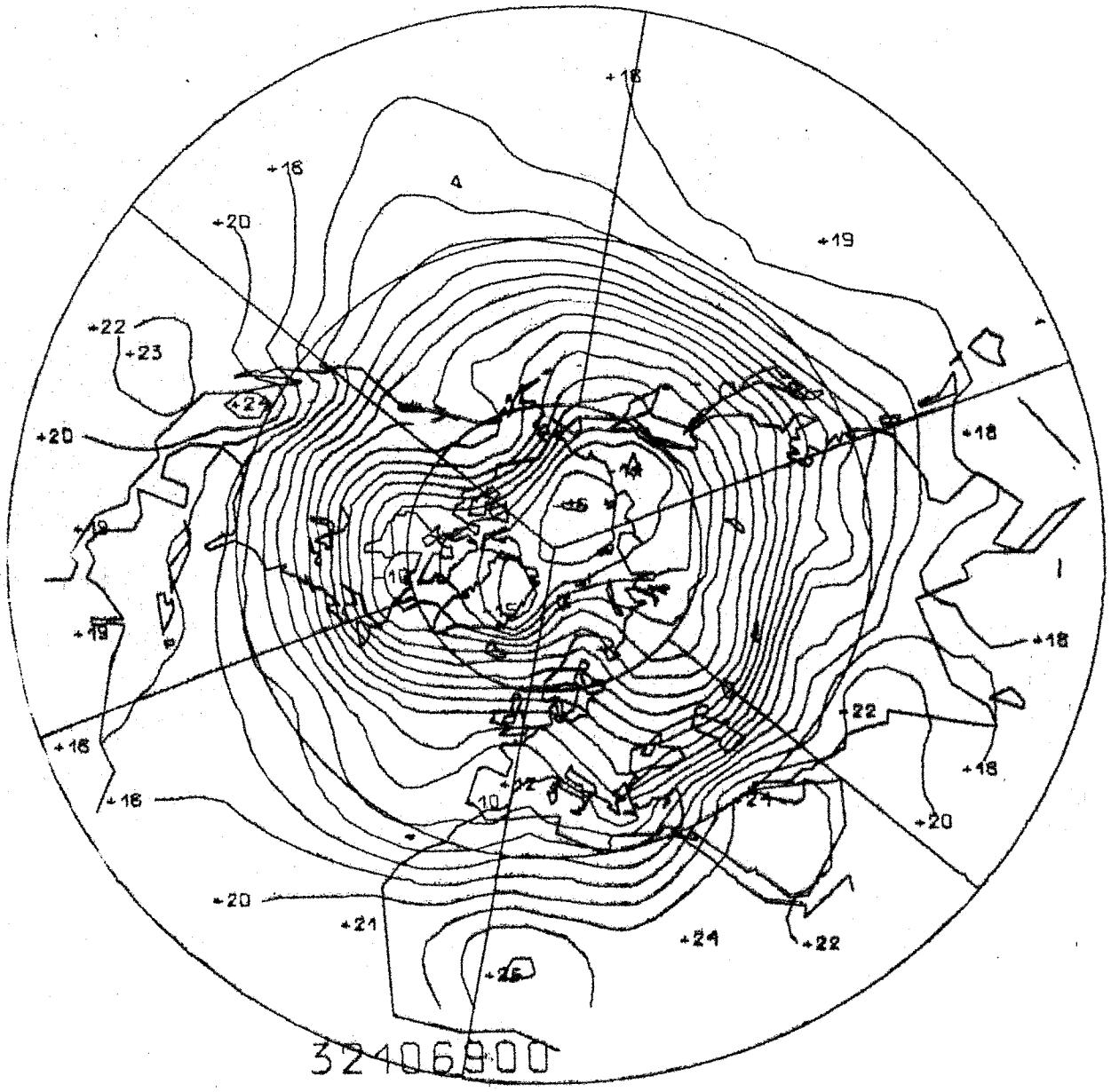


FIG. 127 a

$[\phi]_{(t)}$ 850 mb OCT. 1969

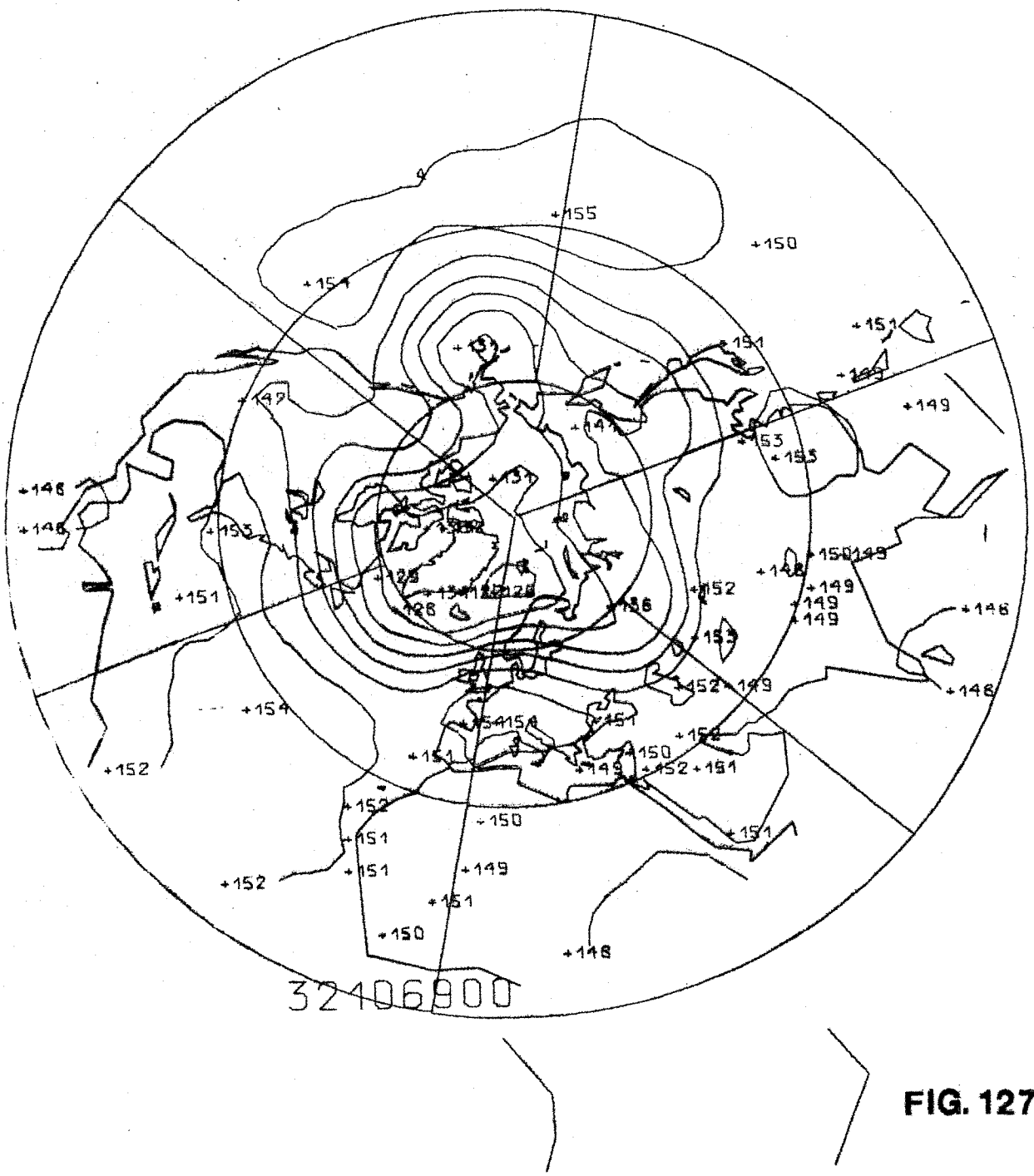


FIG. 127 b

$[\phi]_{(t)}$ 500 mb OCT. 1969

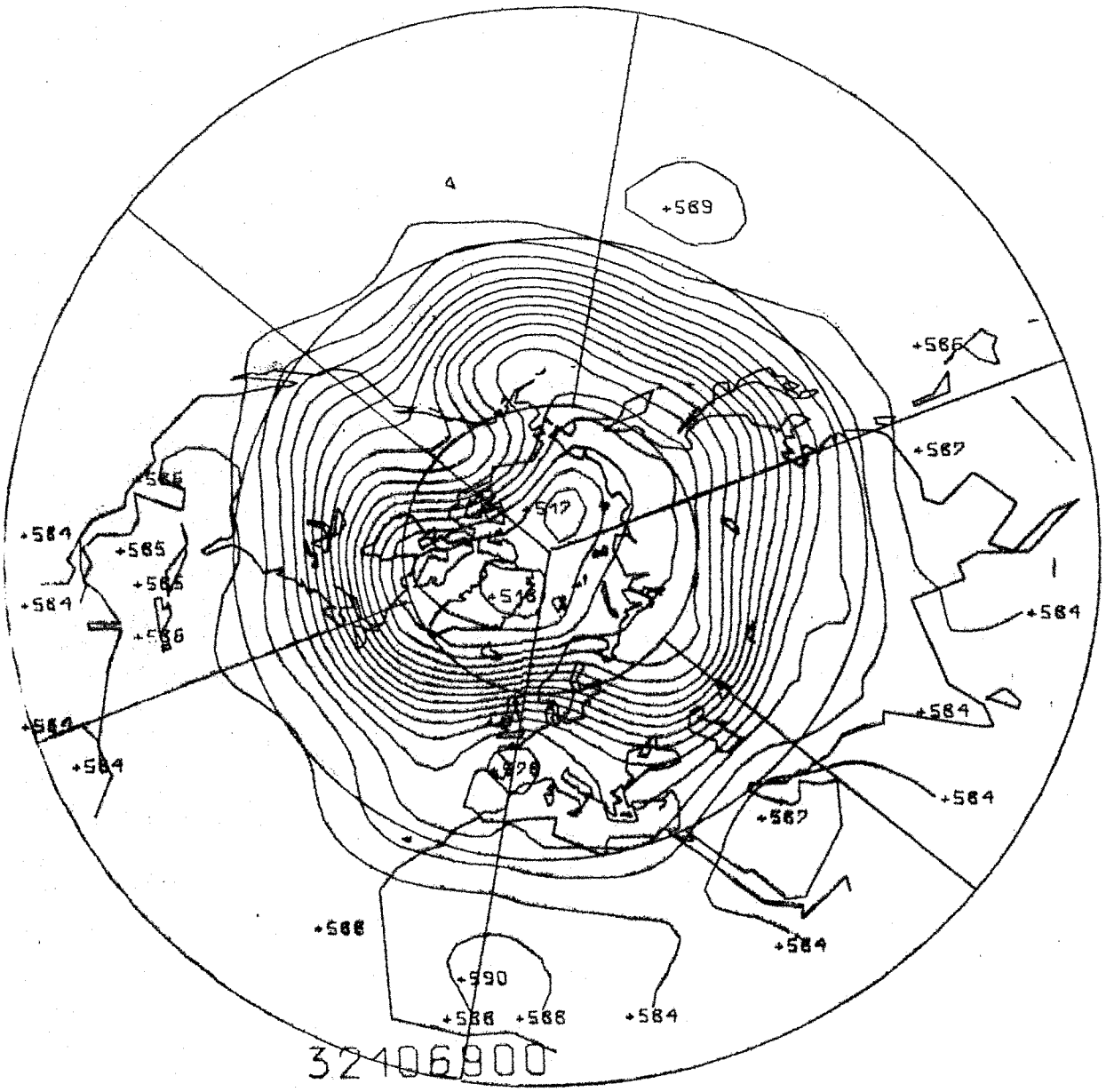


FIG. 128

$[T]_{(t)}$ 300 mb OCT. 1969

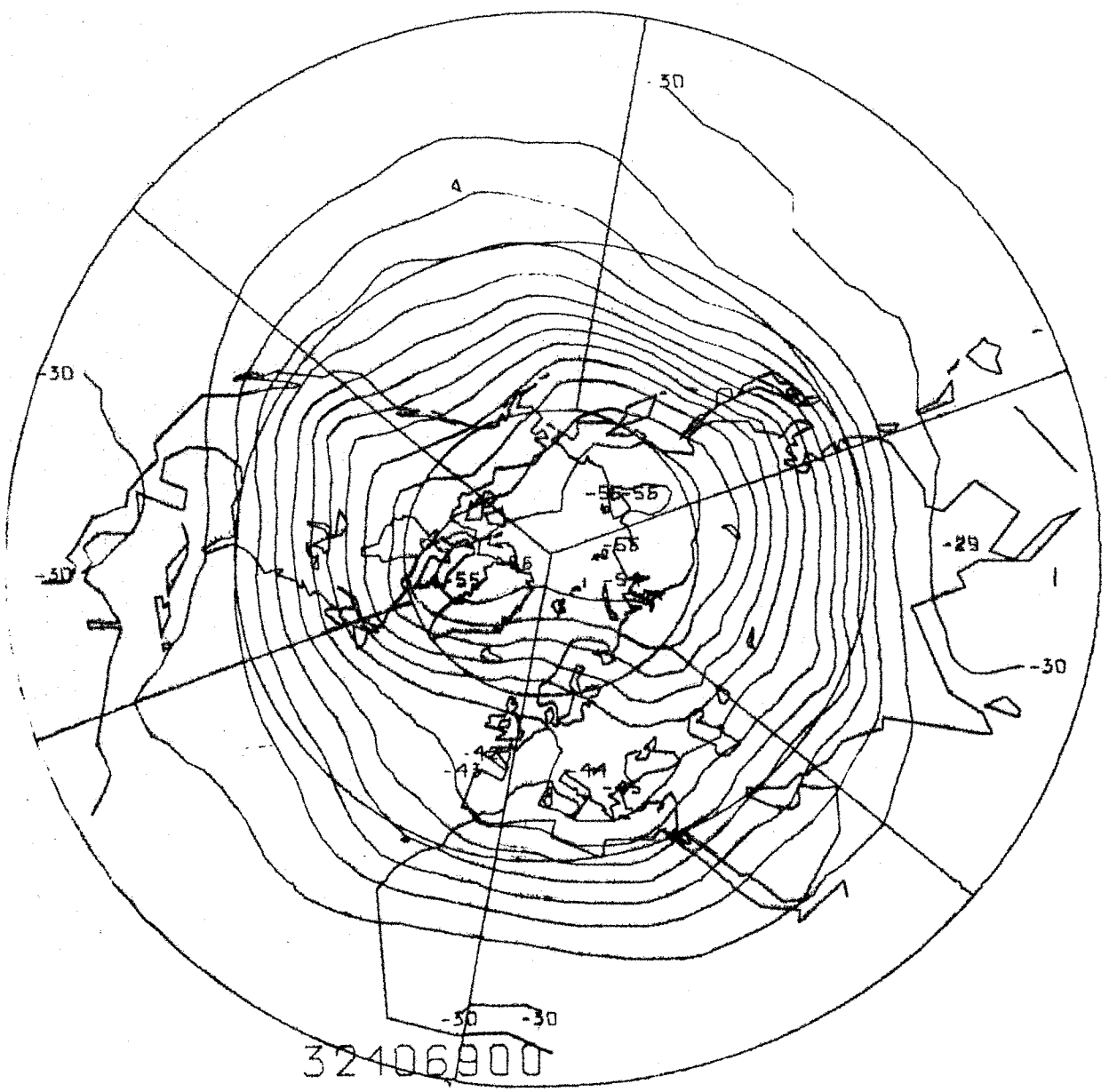


FIG. 129 a

$[\phi]_{(t)}$ 300 mb OCT. 1969

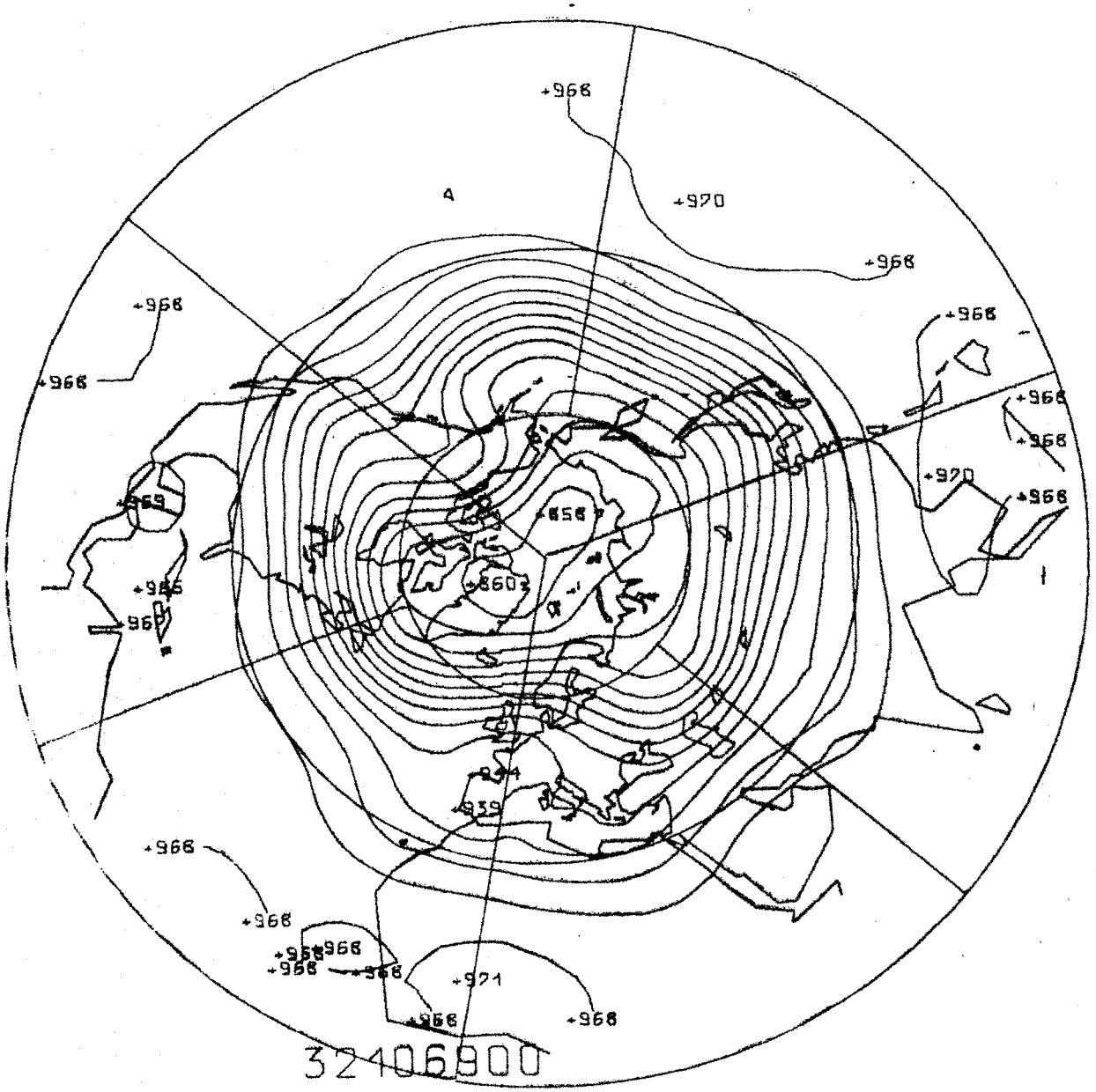


FIG. 129b

$[\phi]_{(t)}$ 100 mb OCT. 1969

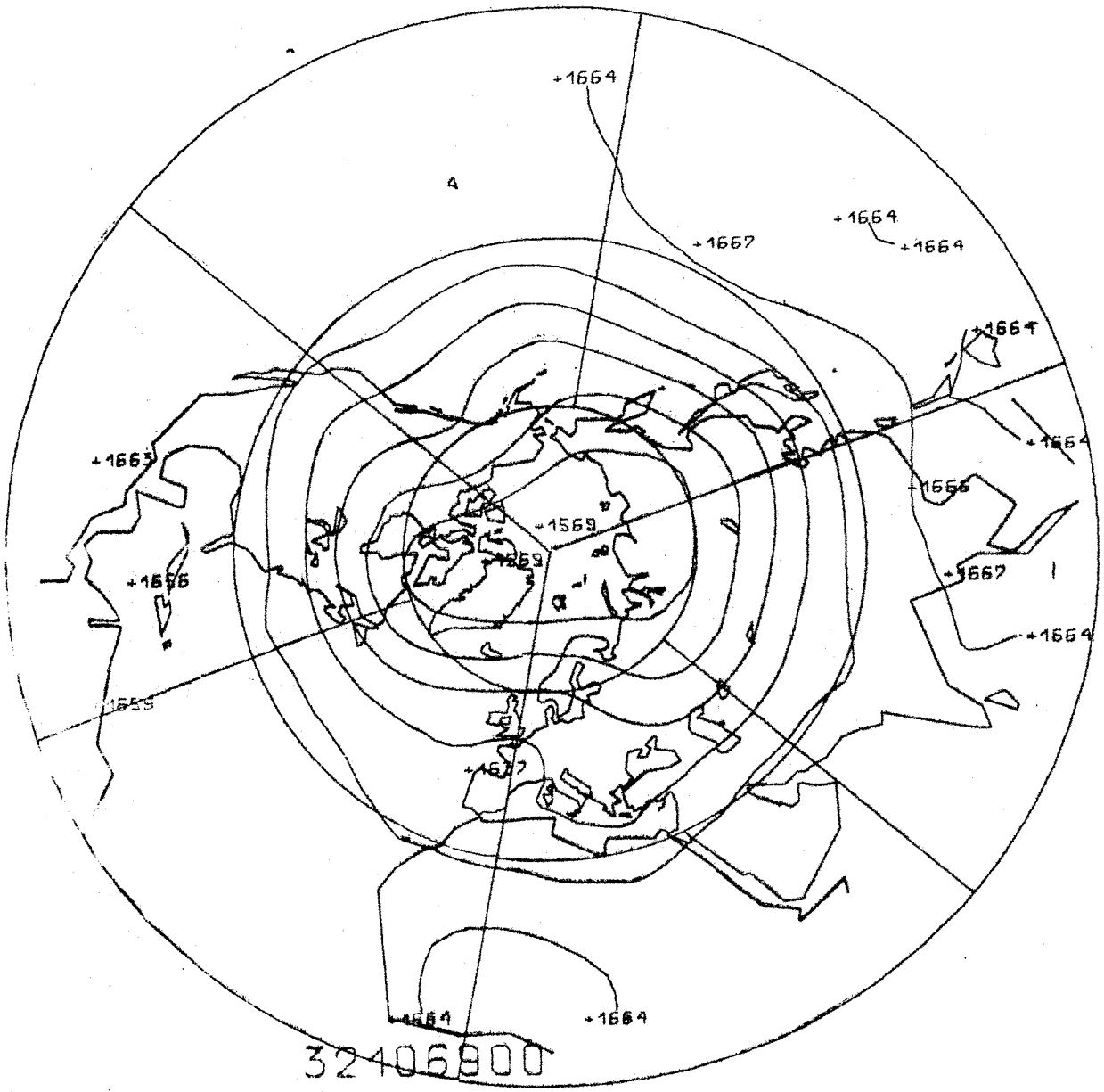


FIG. 13Ob

$[T]_{(t)}$ 850mb OCT. 1970

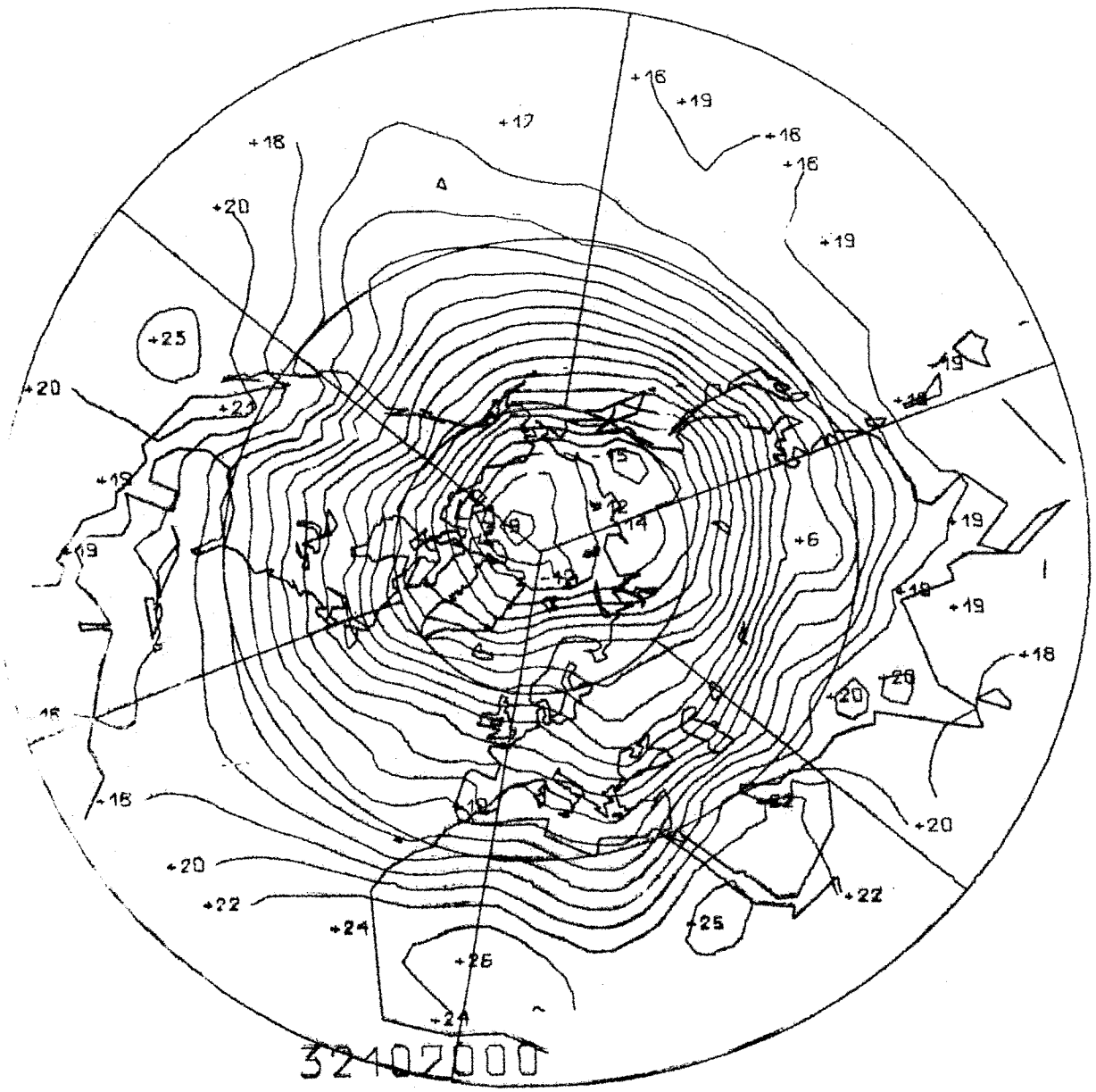


FIG.131a

$[\Phi]_{(t)}$ 850 mb OKT. 1970

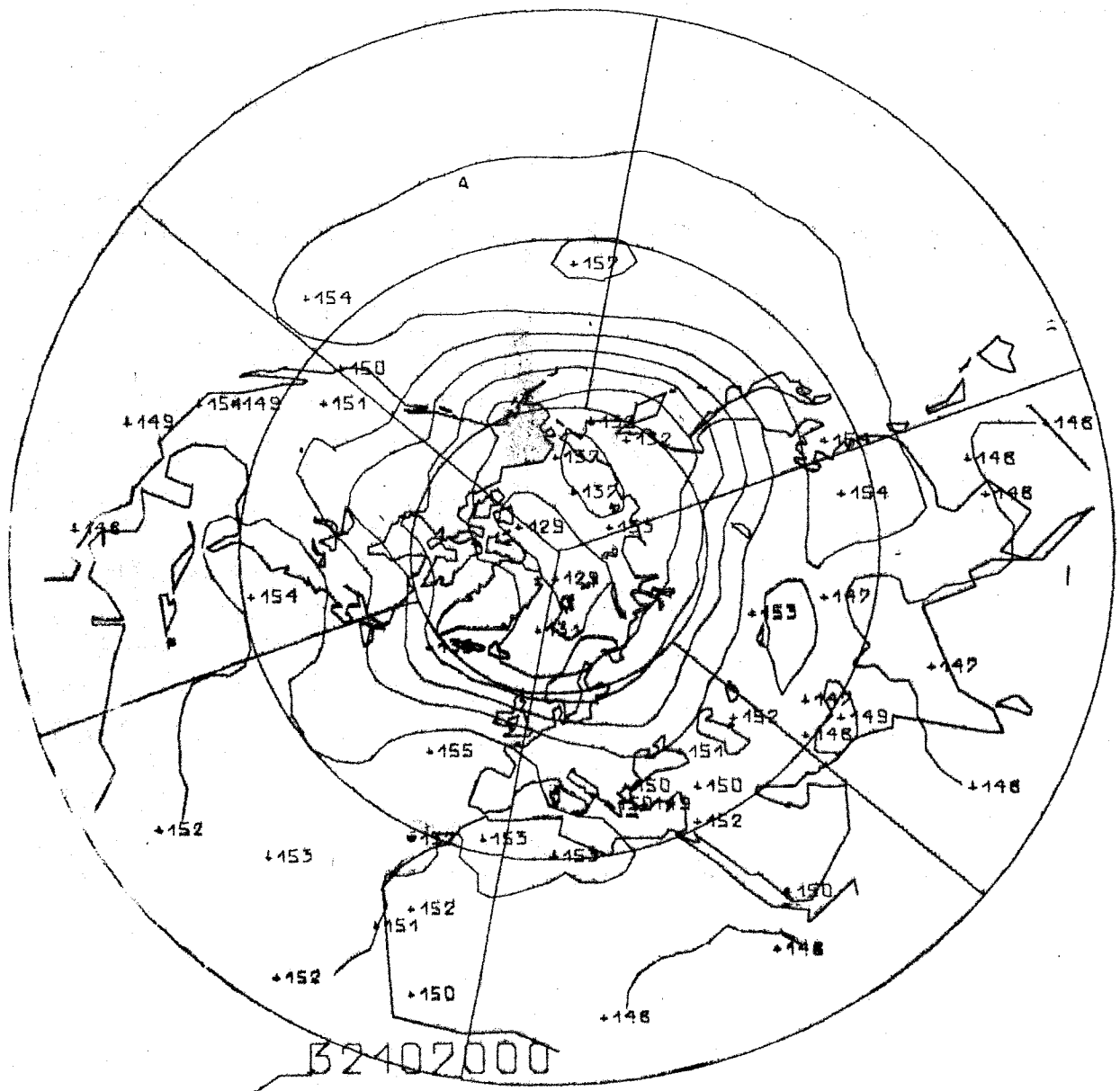


FIG.131b

$[\Phi]_{(t)}$ **500 mb OKT. 1970**

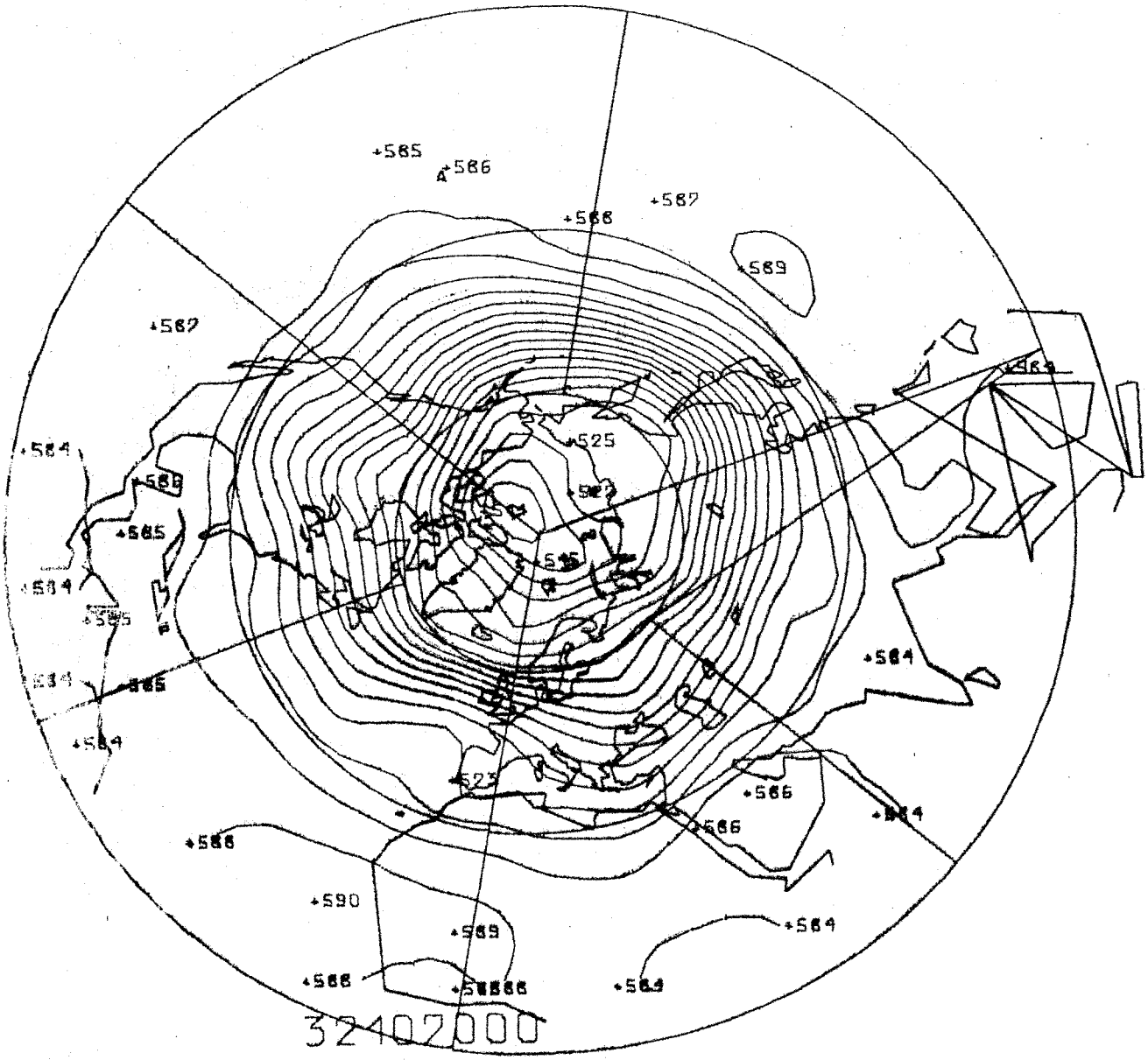


FIG. 132

$[T]_{(t)}$ 300mb OCT. 1970

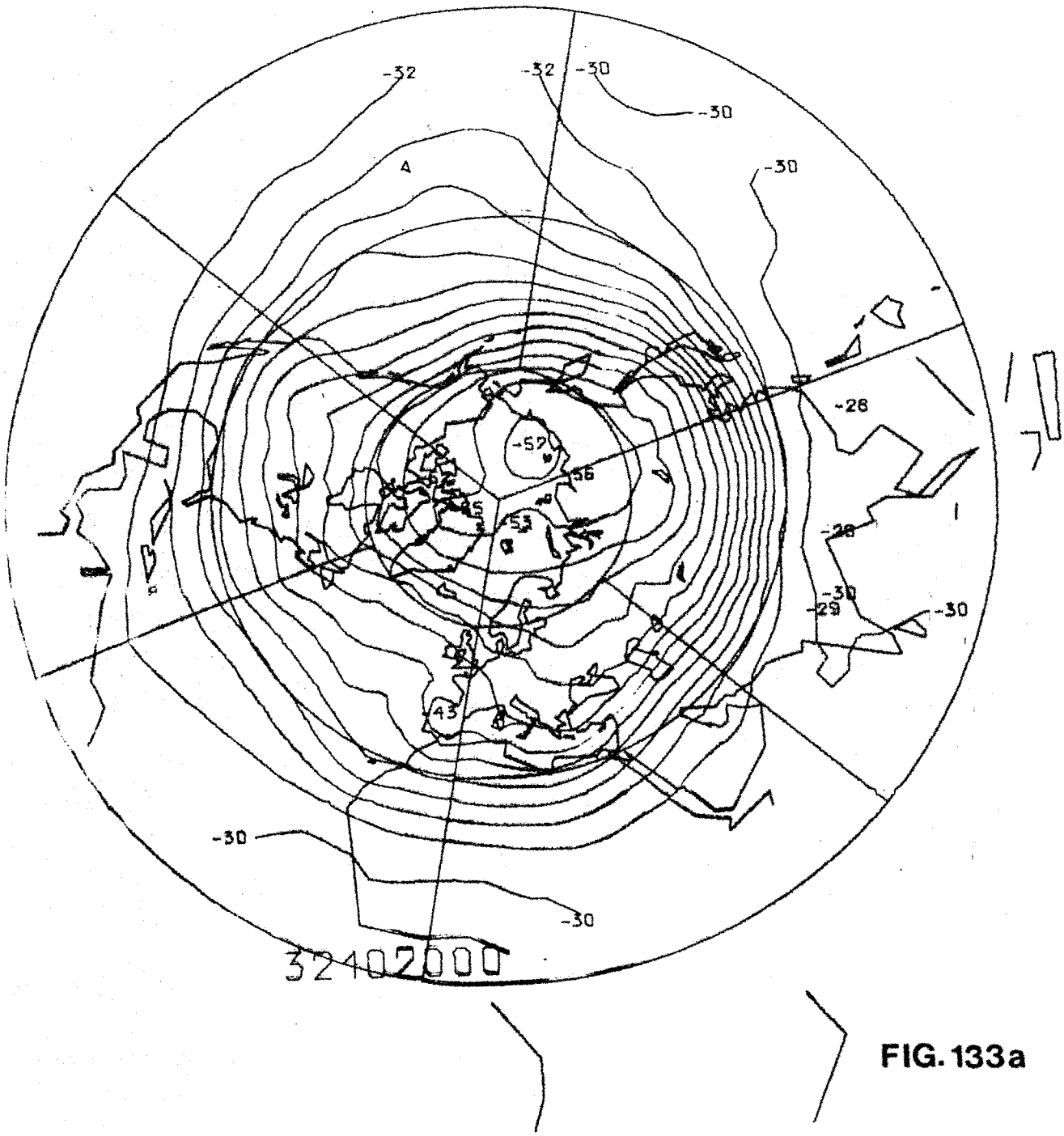


FIG. 133a

$[\phi]_{(t)}$ **300mb OKT. 1970**

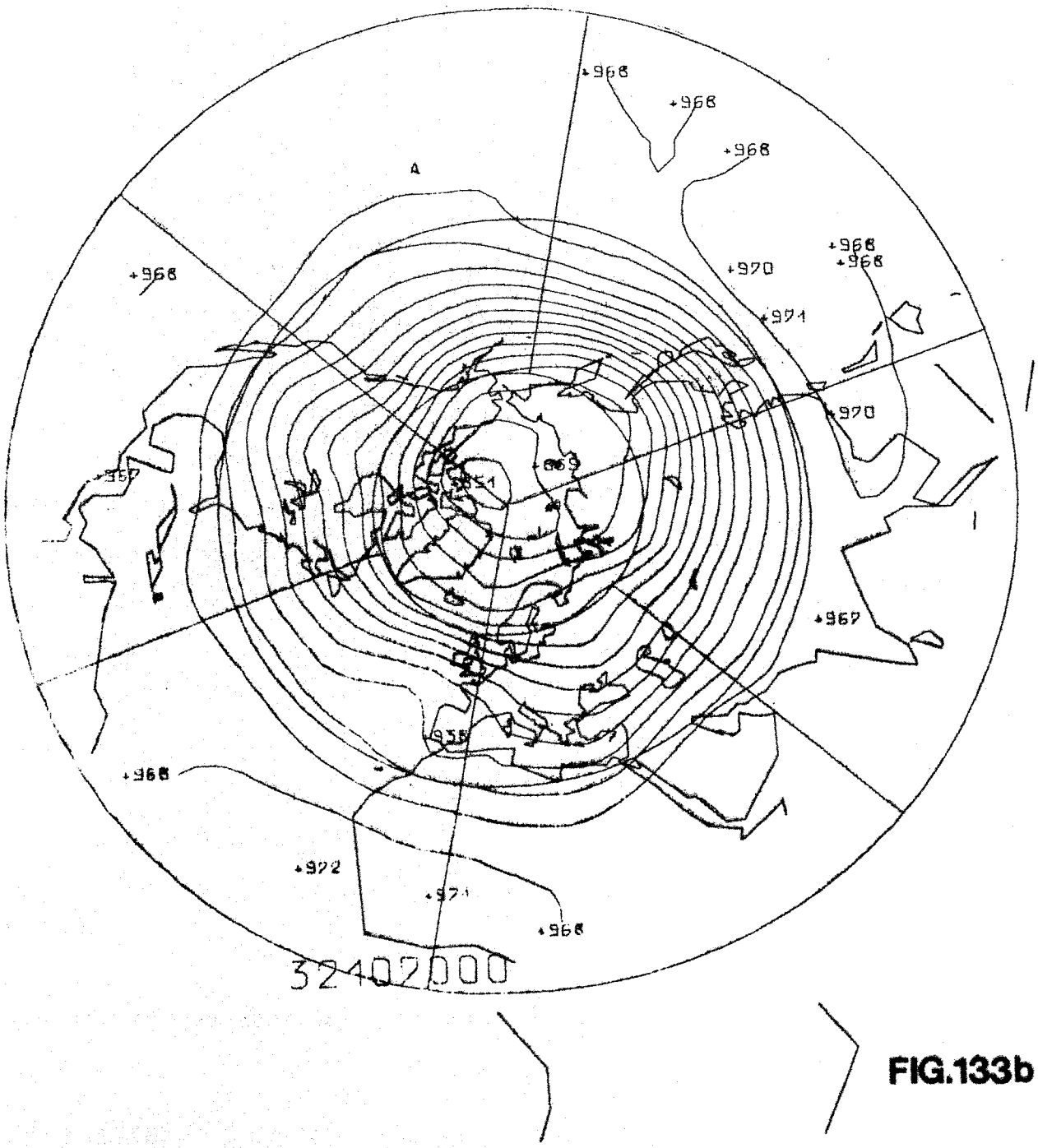


FIG.133b

$[T]_{(t)}$ 100mb OCT. 1970

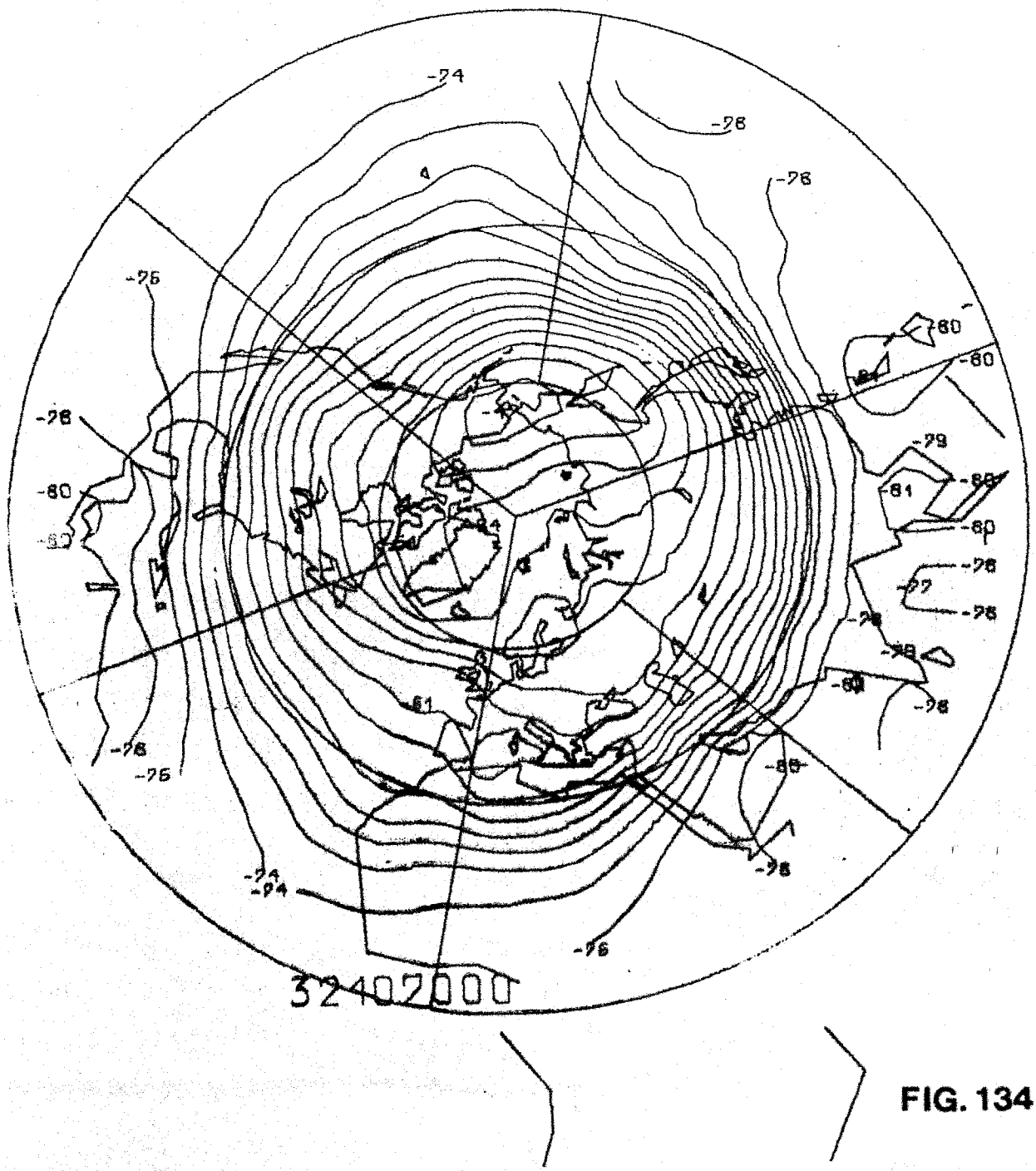


FIG. 134 a

$[\Phi]_{(t)}$ 100mb OKT. 1970

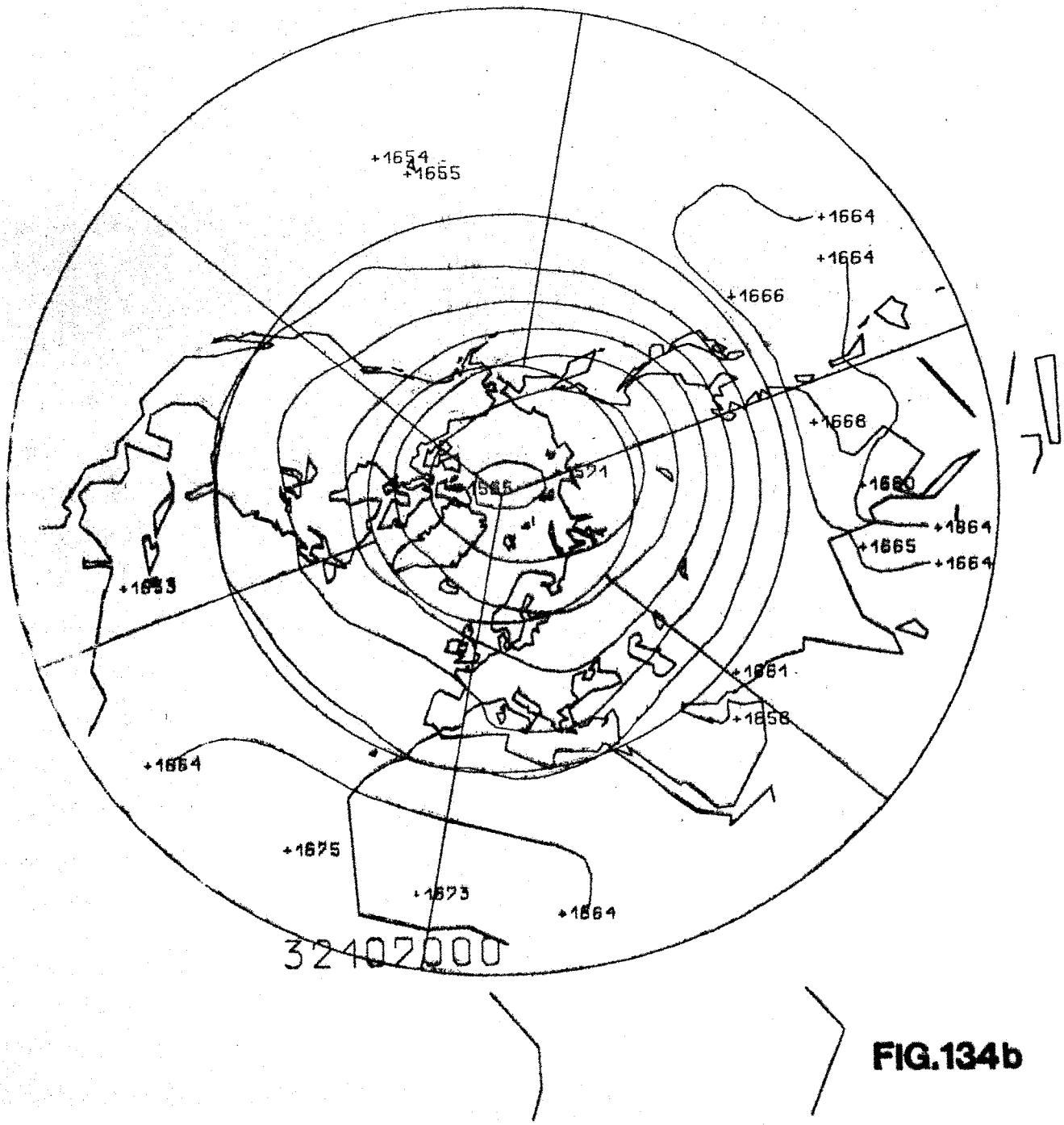


FIG.134b

$[T]_{(t)}$ 850mb OCT. 1971

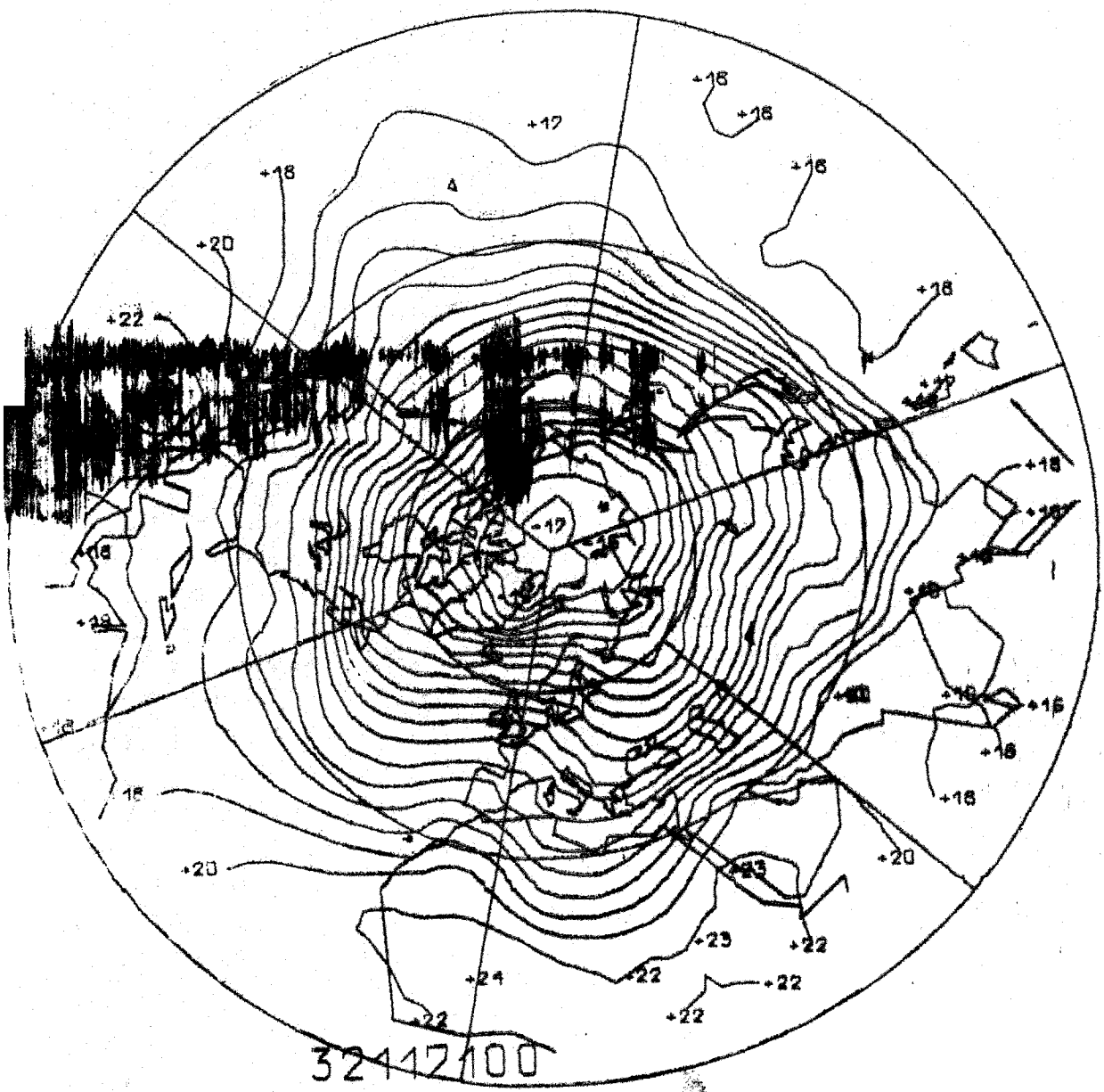


FIG. 135a

$[\phi]_{(t)}$ 850 mb OCT. 1971

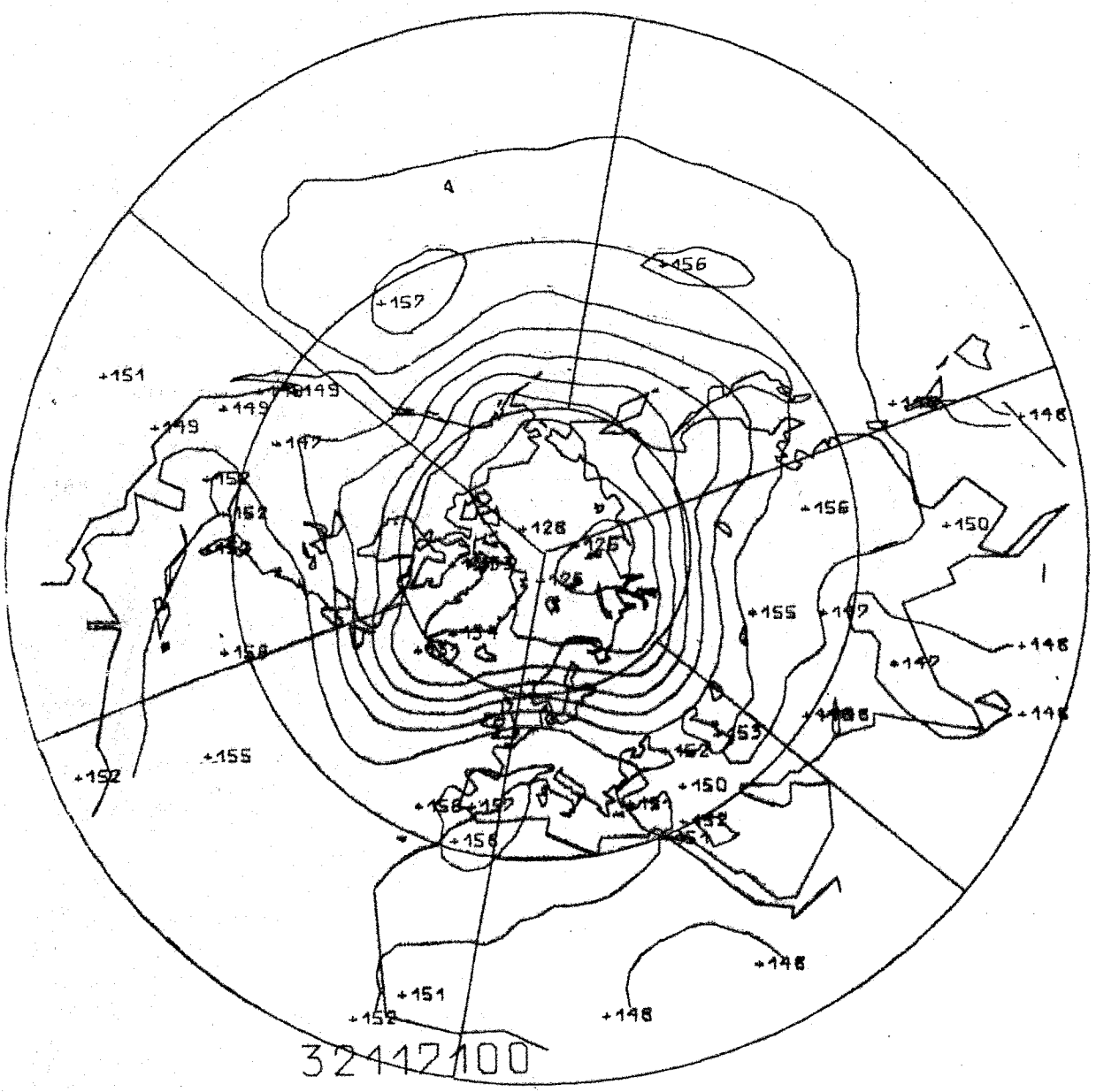


FIG. 135 b

$[\phi]_{(t)}$ 500 mb OCT. 1971

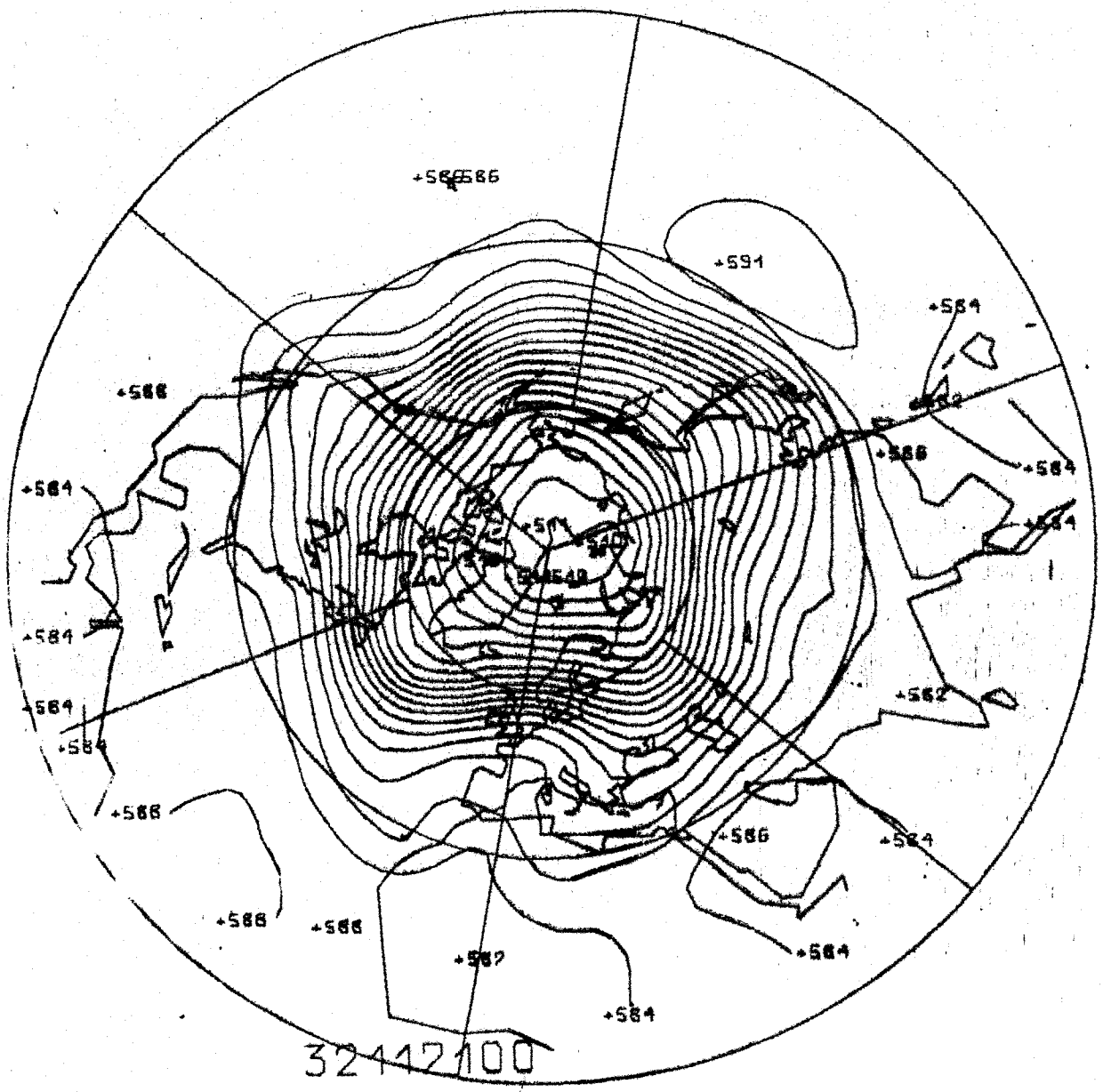


FIG. 136

$[T]_{(t)}$ 300 mb OCT. 1971

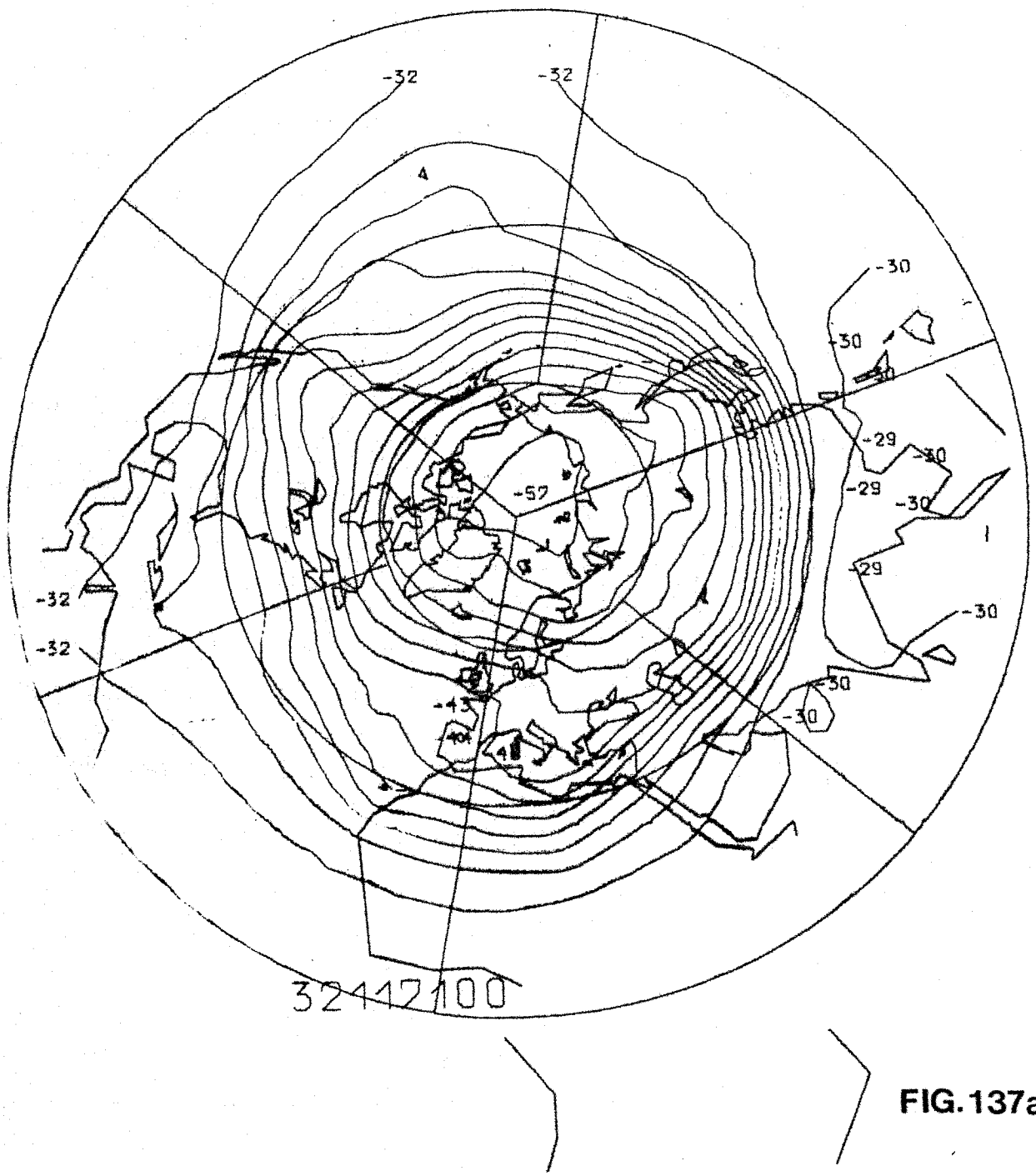


FIG. 137a

$[\phi]_{(t)}$ 300 mb OCT. 1971

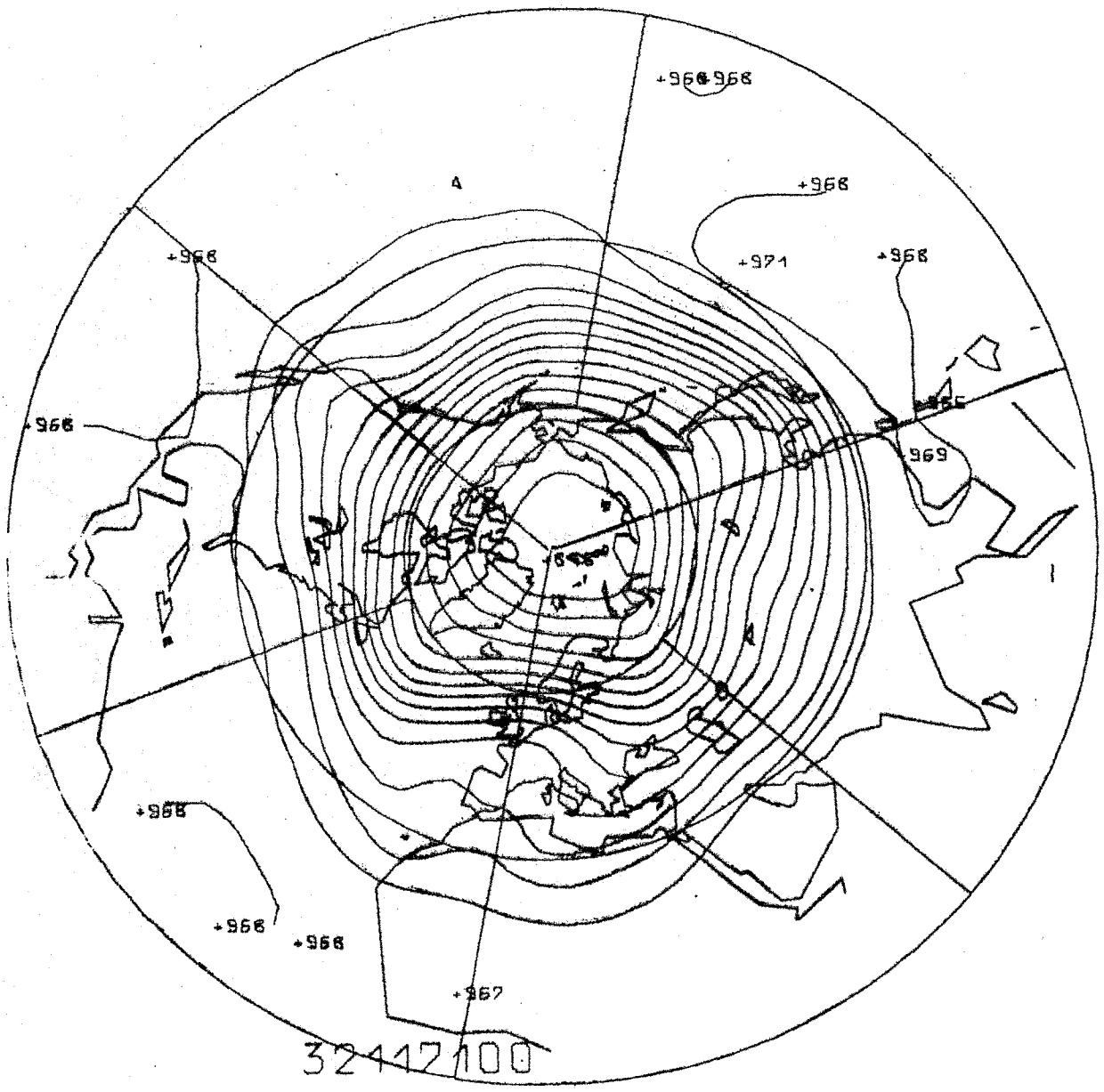


FIG. 137 b

$[T]_{(t)}$ 100 mb OCT. 1971

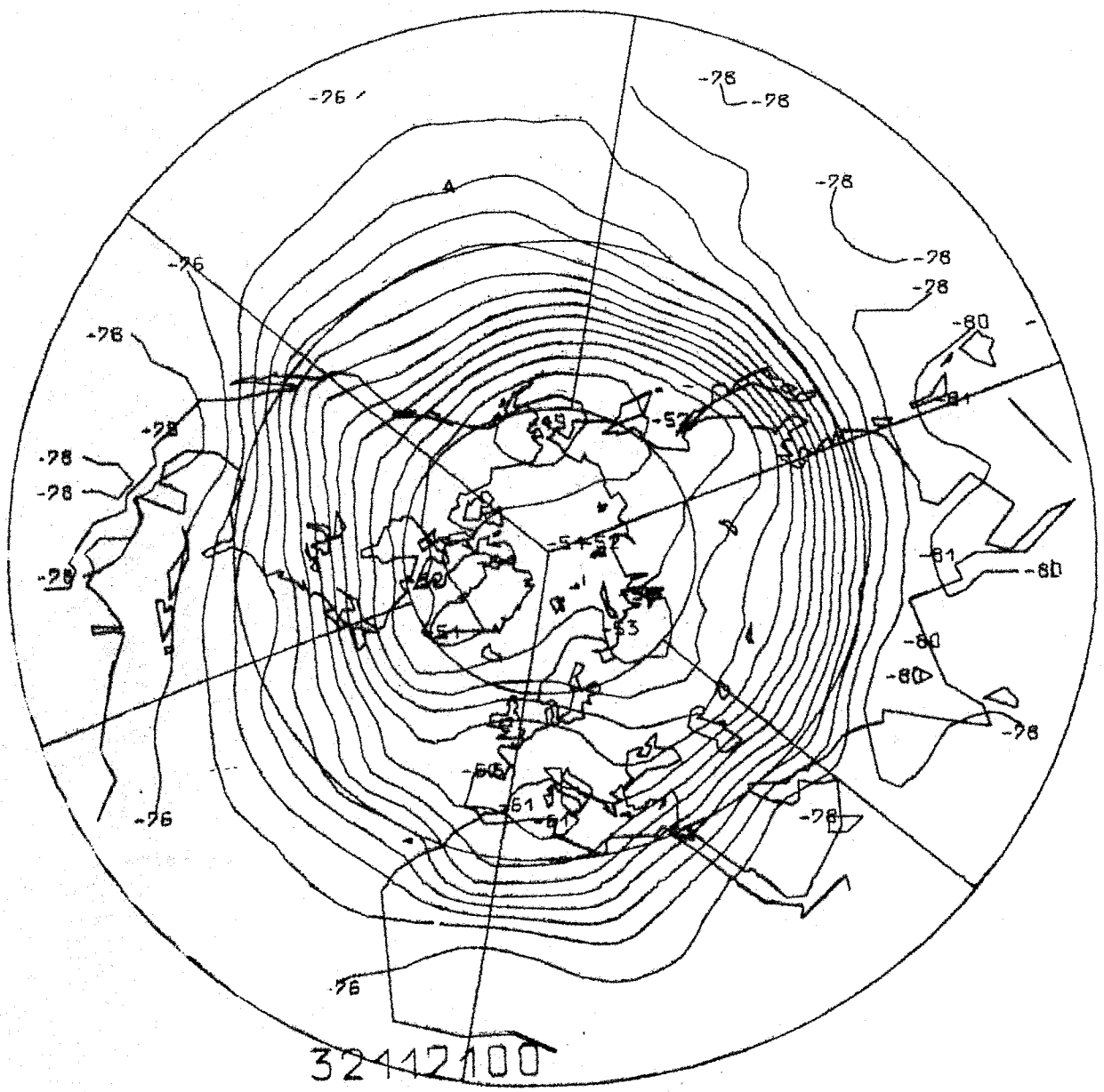


FIG. 138a

$[\phi]_{(t)}$ 100mb OCT. 1971

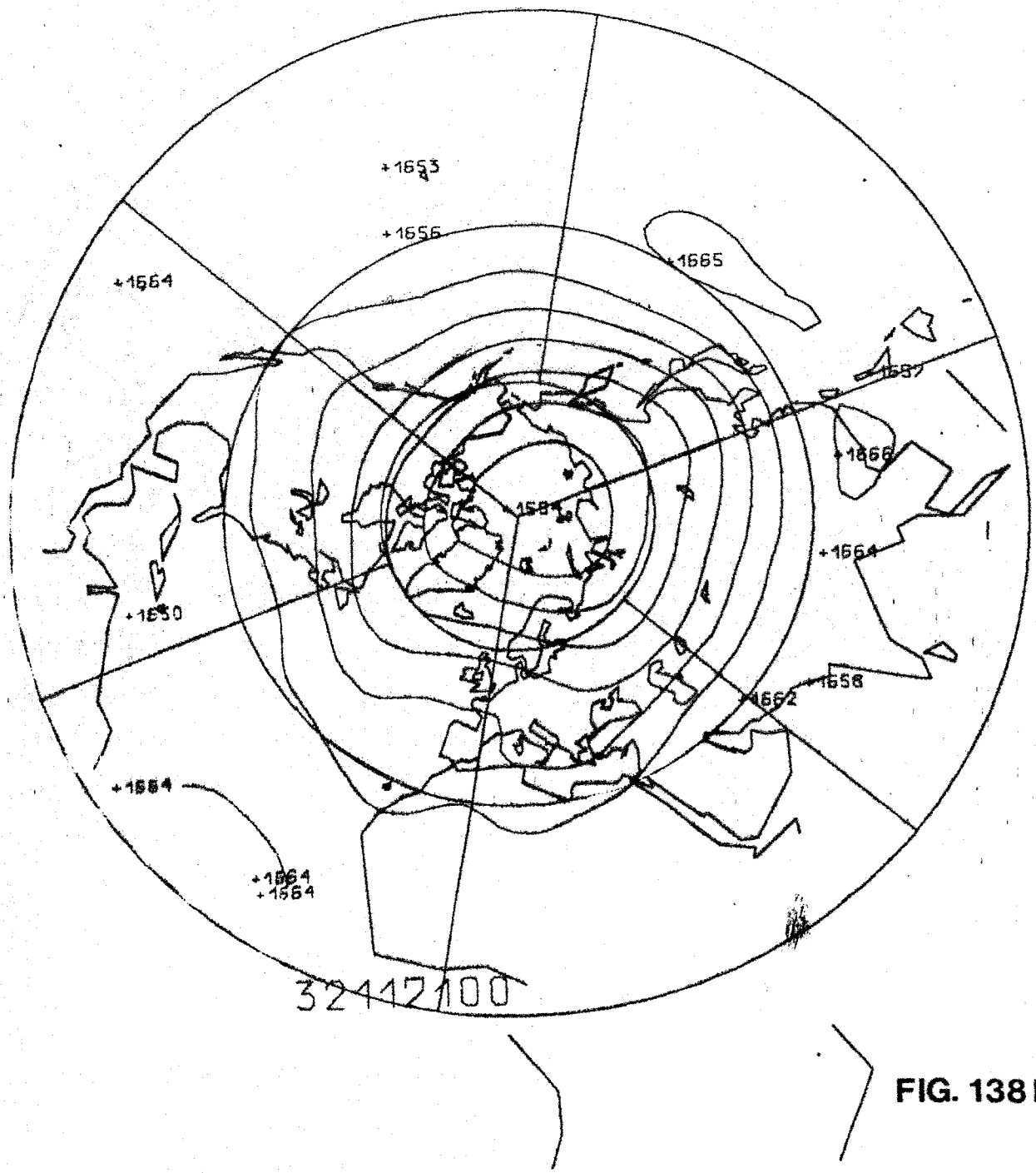


FIG. 138 b

$[T]_{(t)}$ 850mb OCT. 1972

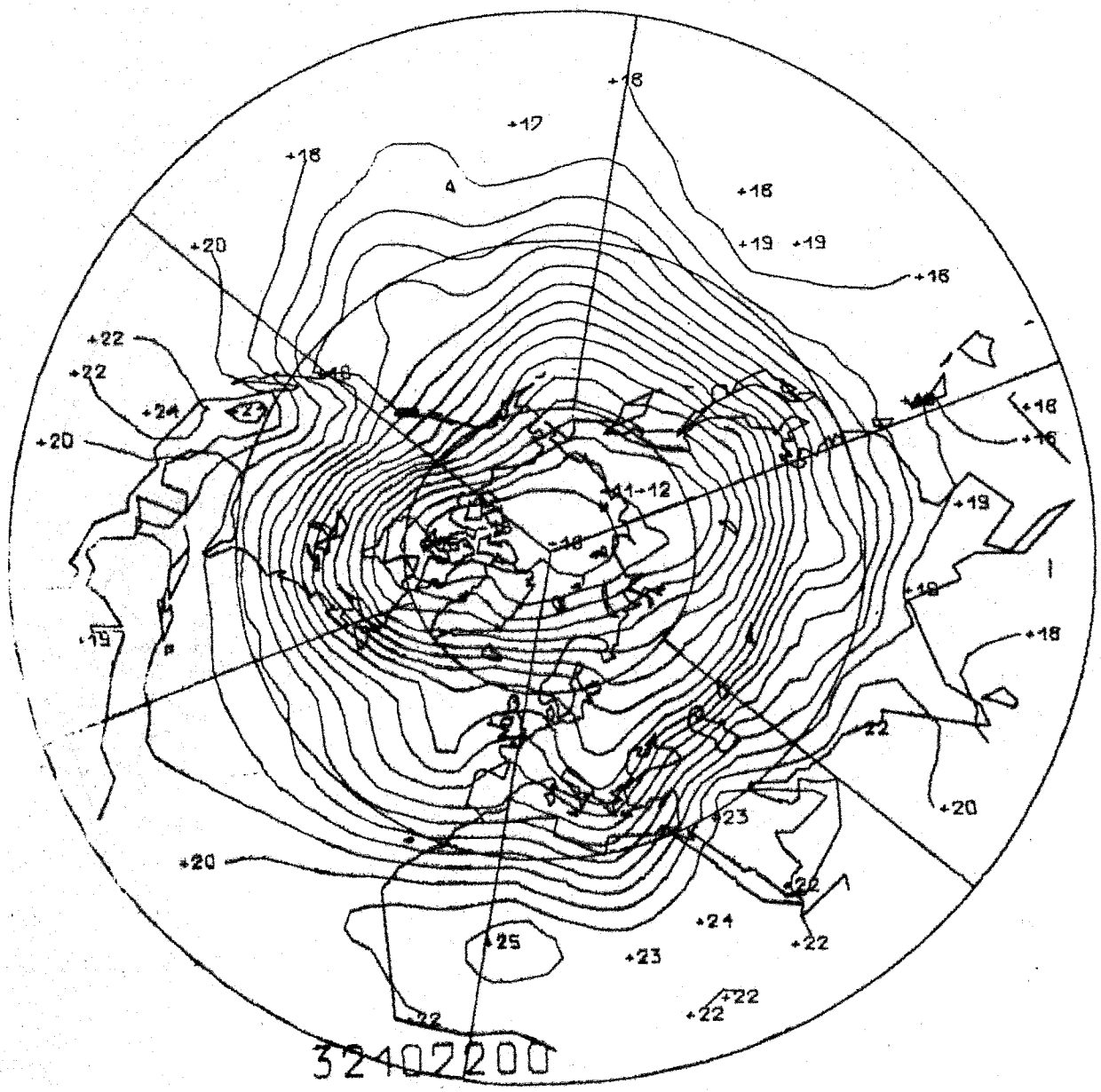


FIG.139 a

$[\phi]_{(t)}$ 850 mb OCT. 1972

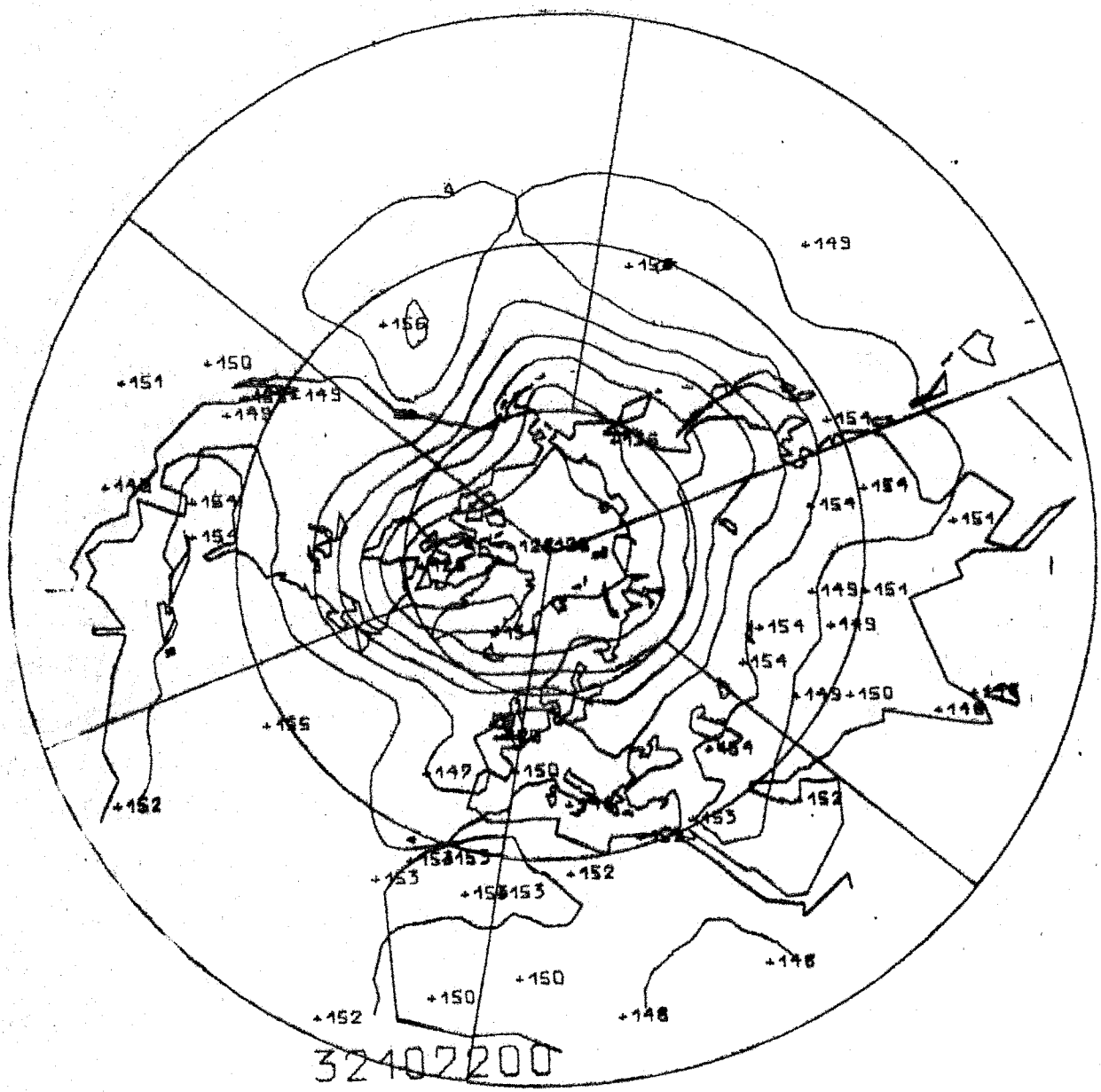


FIG.139 b

$[\phi]_{(t)}$ 500 mb OCT. 1972

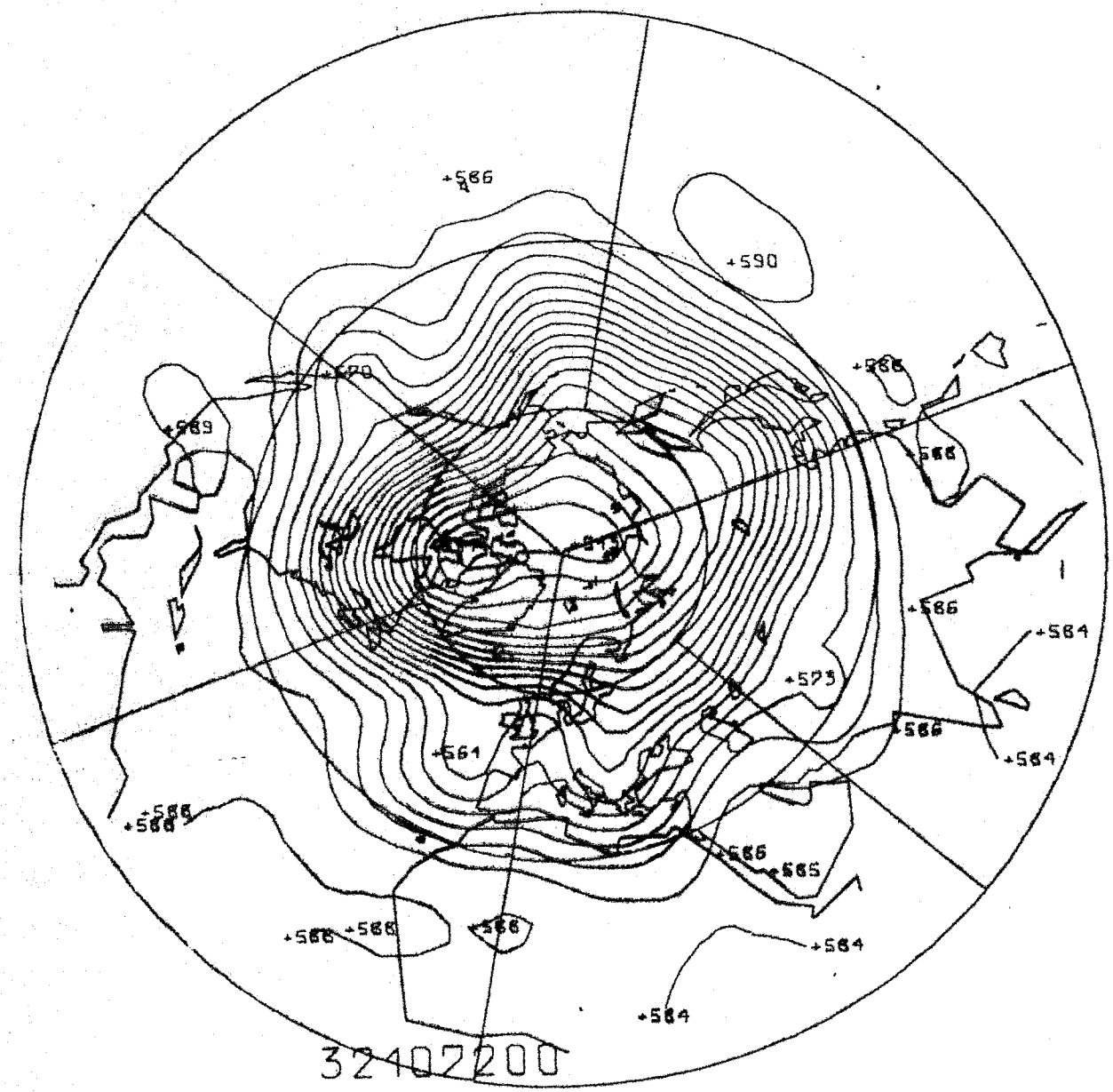


FIG. 140

$[T]_{(t)}$ 300 mb OCT. 1972

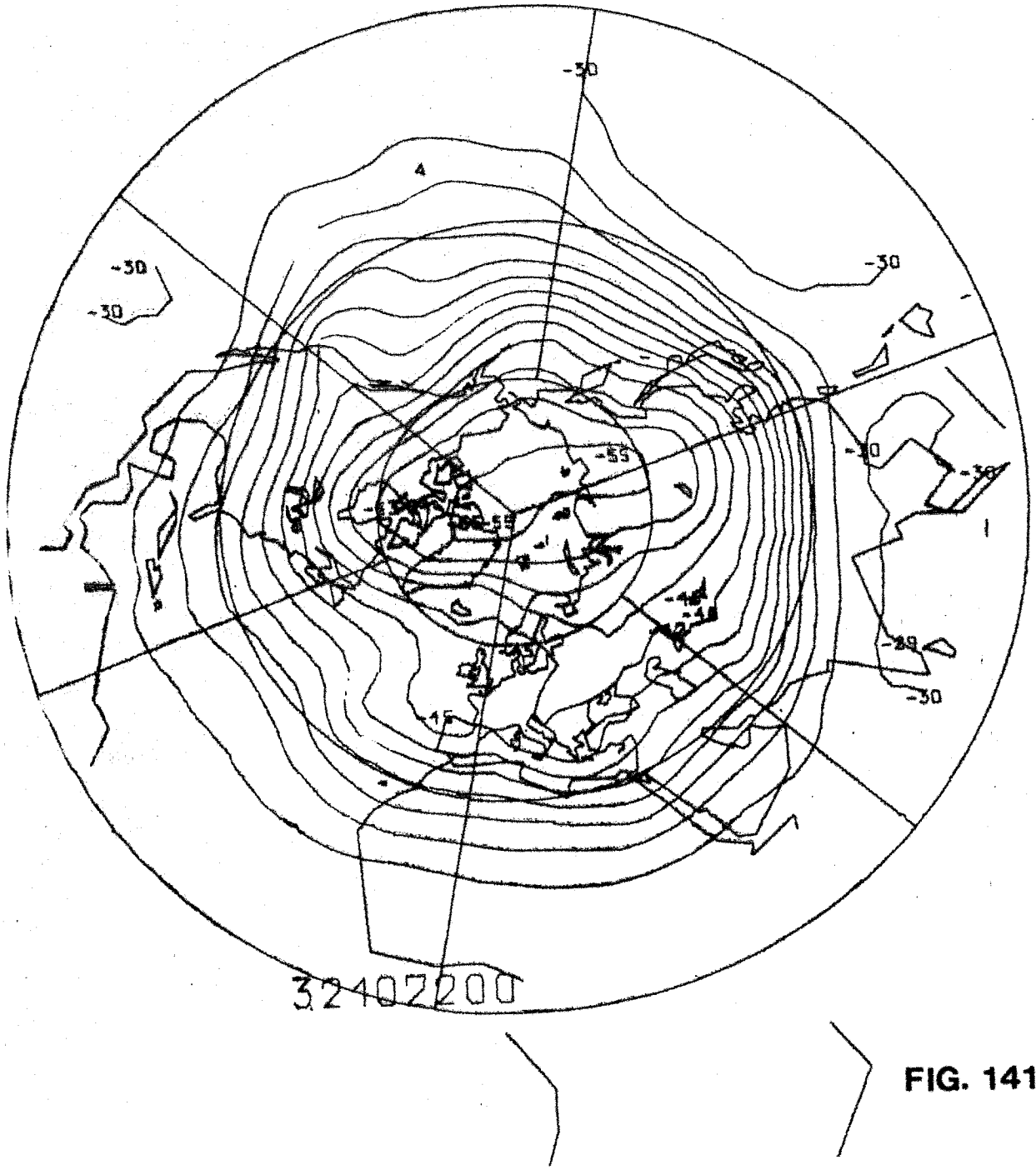
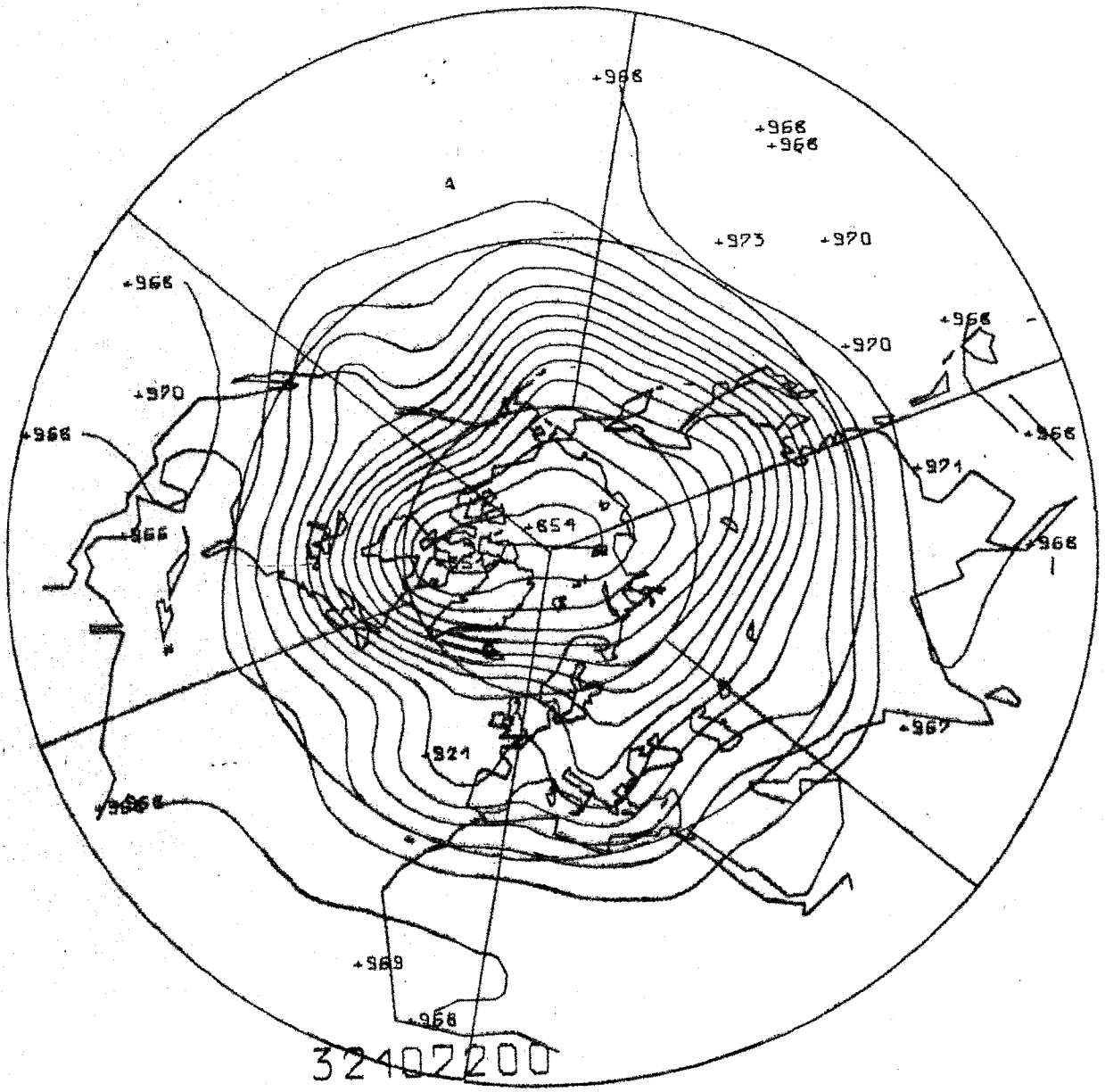


FIG. 141 a

$[\Phi]_{(t)}$ 300mb OCT. 1972



3240200

FIG. 141 b

$[T]_{(t)}$ 100 mb OCT. 1972

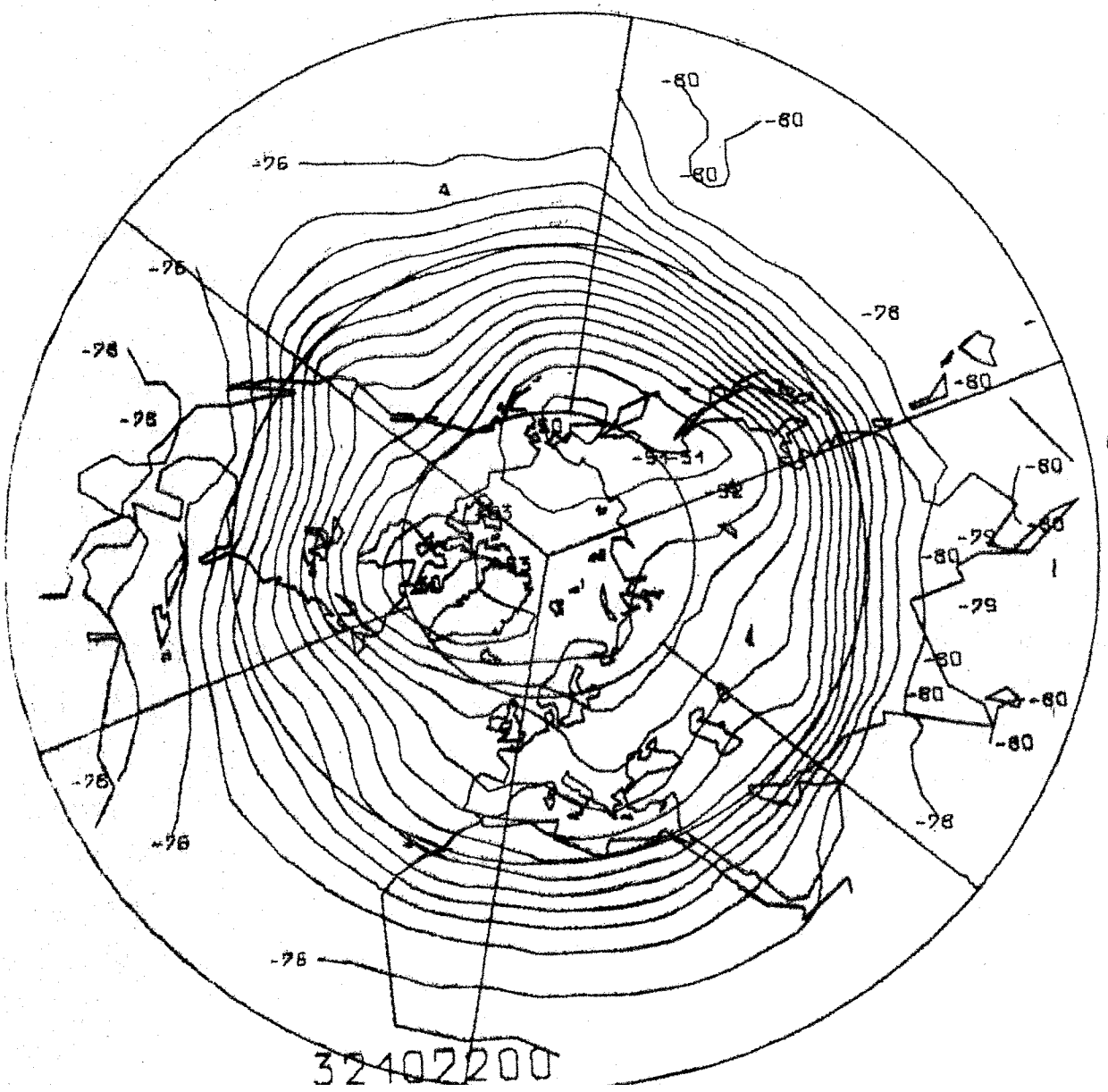


FIG. 142 a

$[\Phi]_{\omega}$ 100 mb OCT. 1972

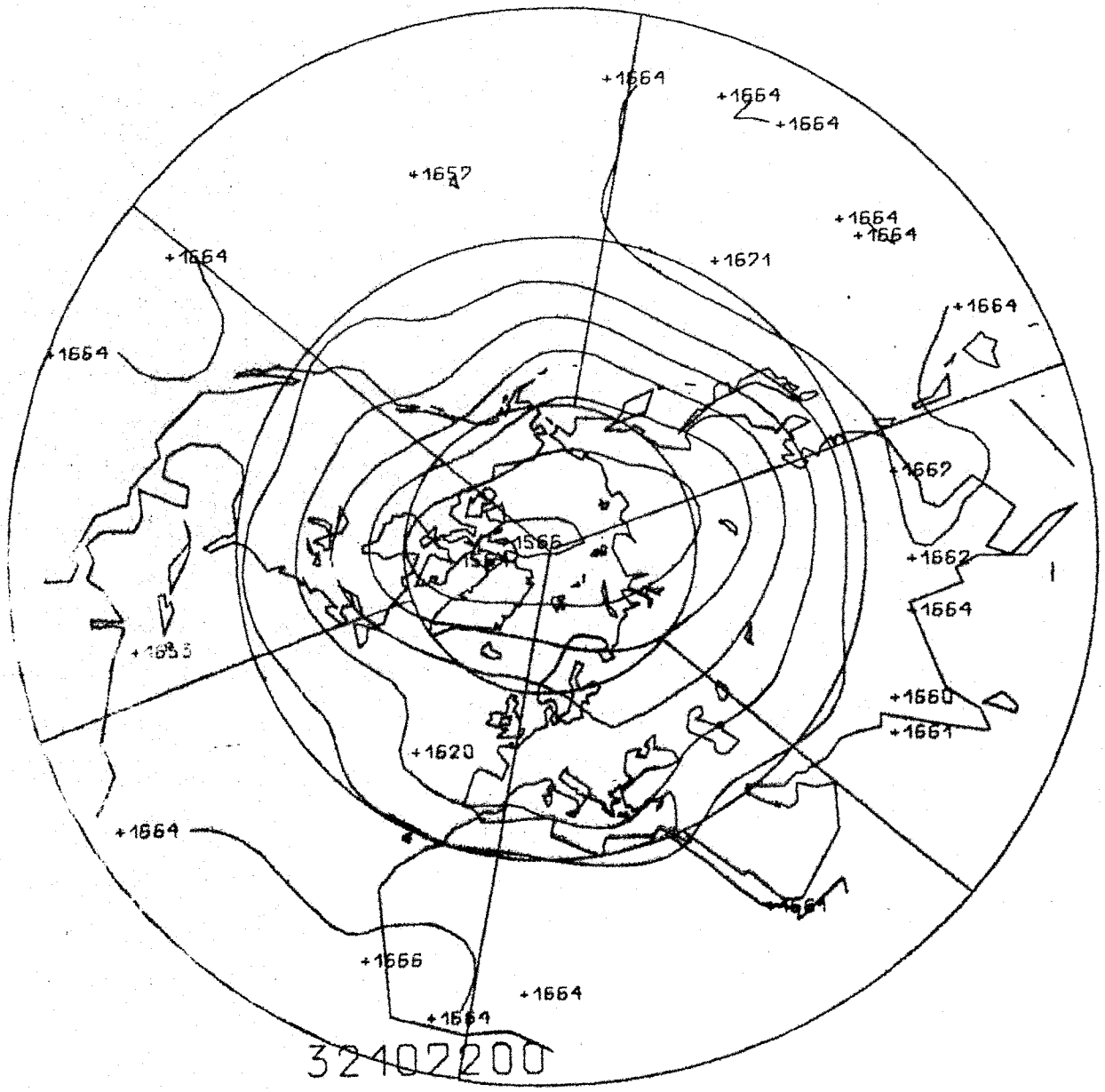


FIG. 142 b

$[T]_{(t)}$ 850mb OCT. 1973

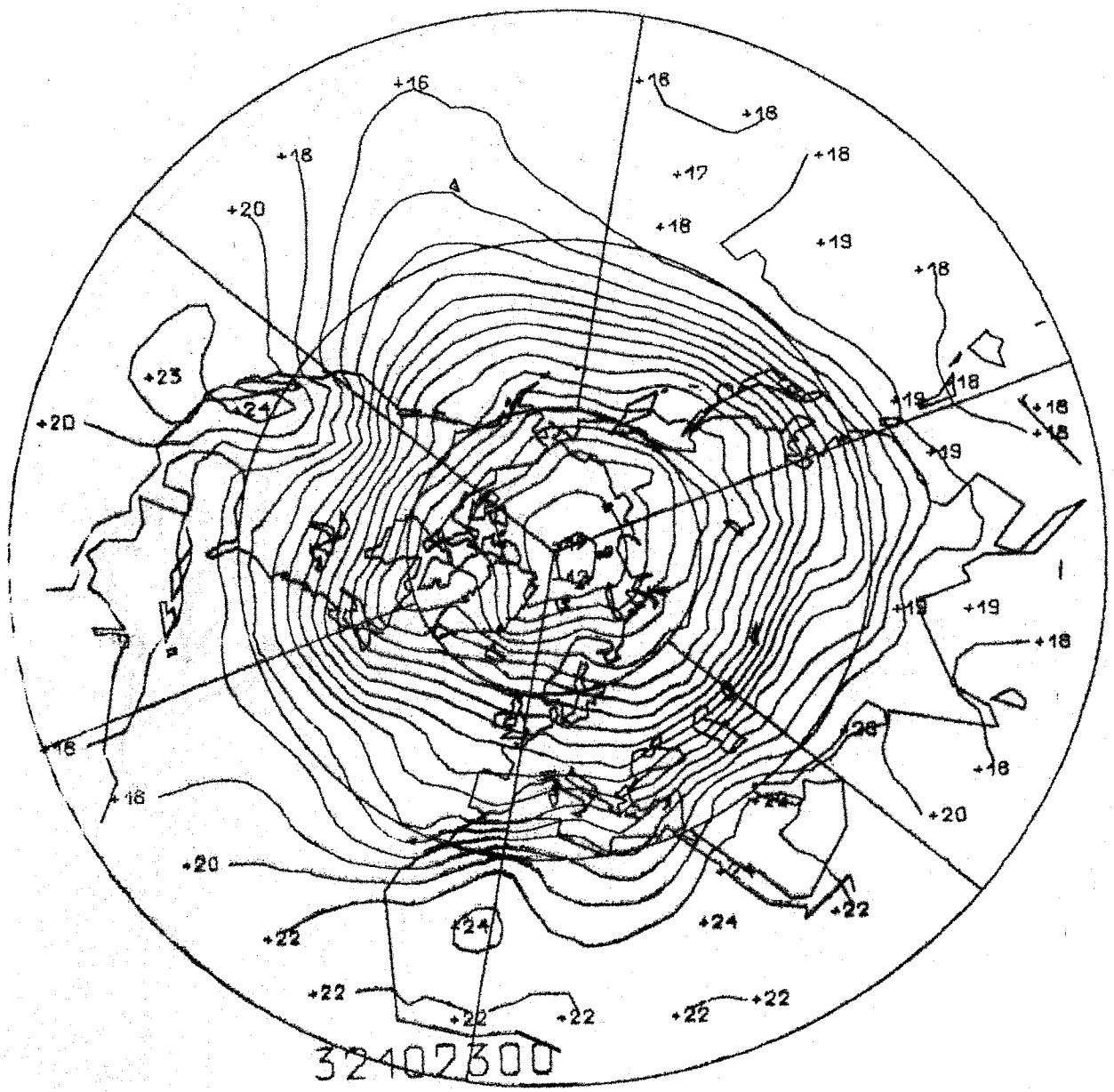


FIG. 143a

$[\phi]_{(t)}$ 850mb OCT. 1973

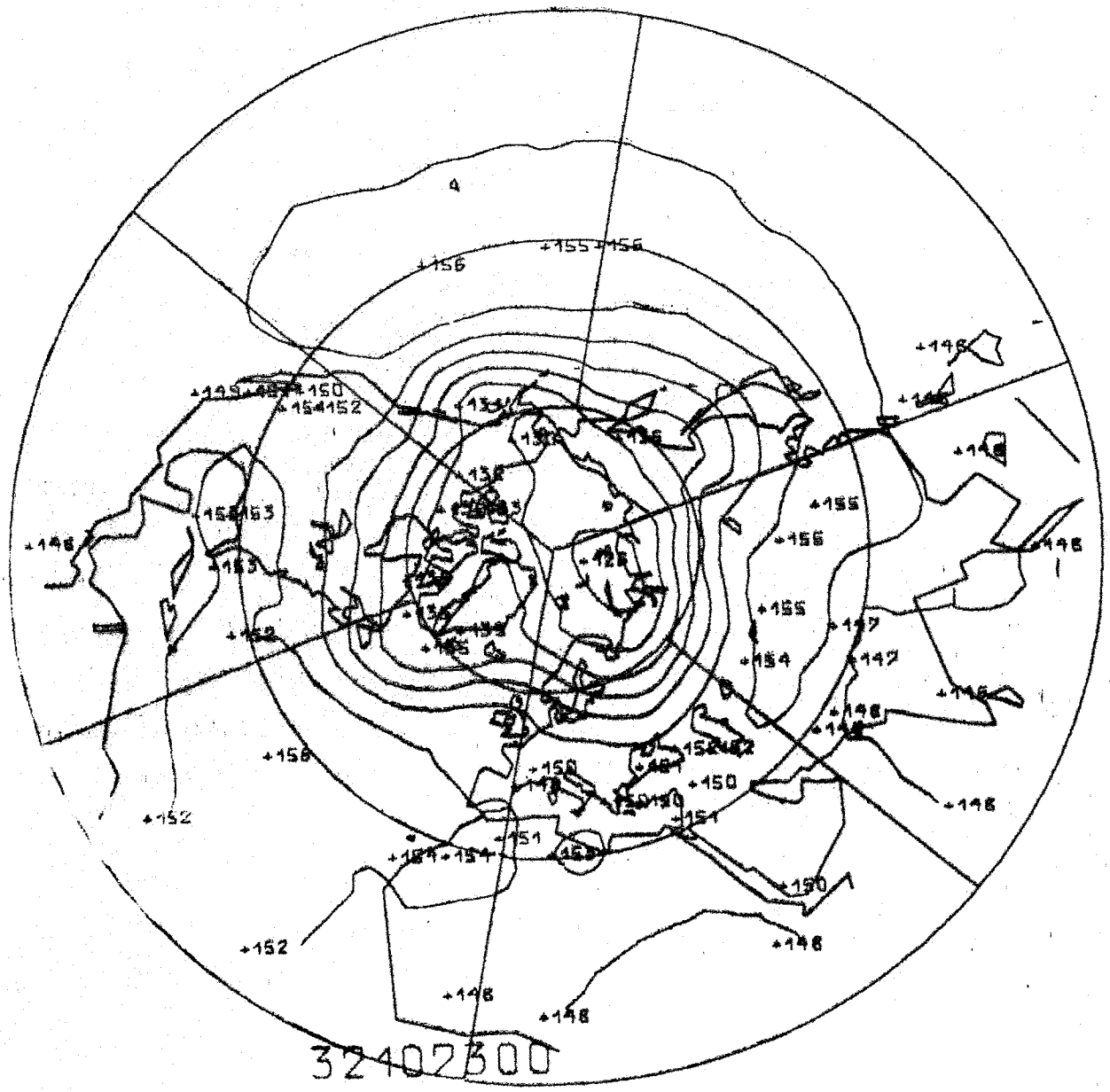
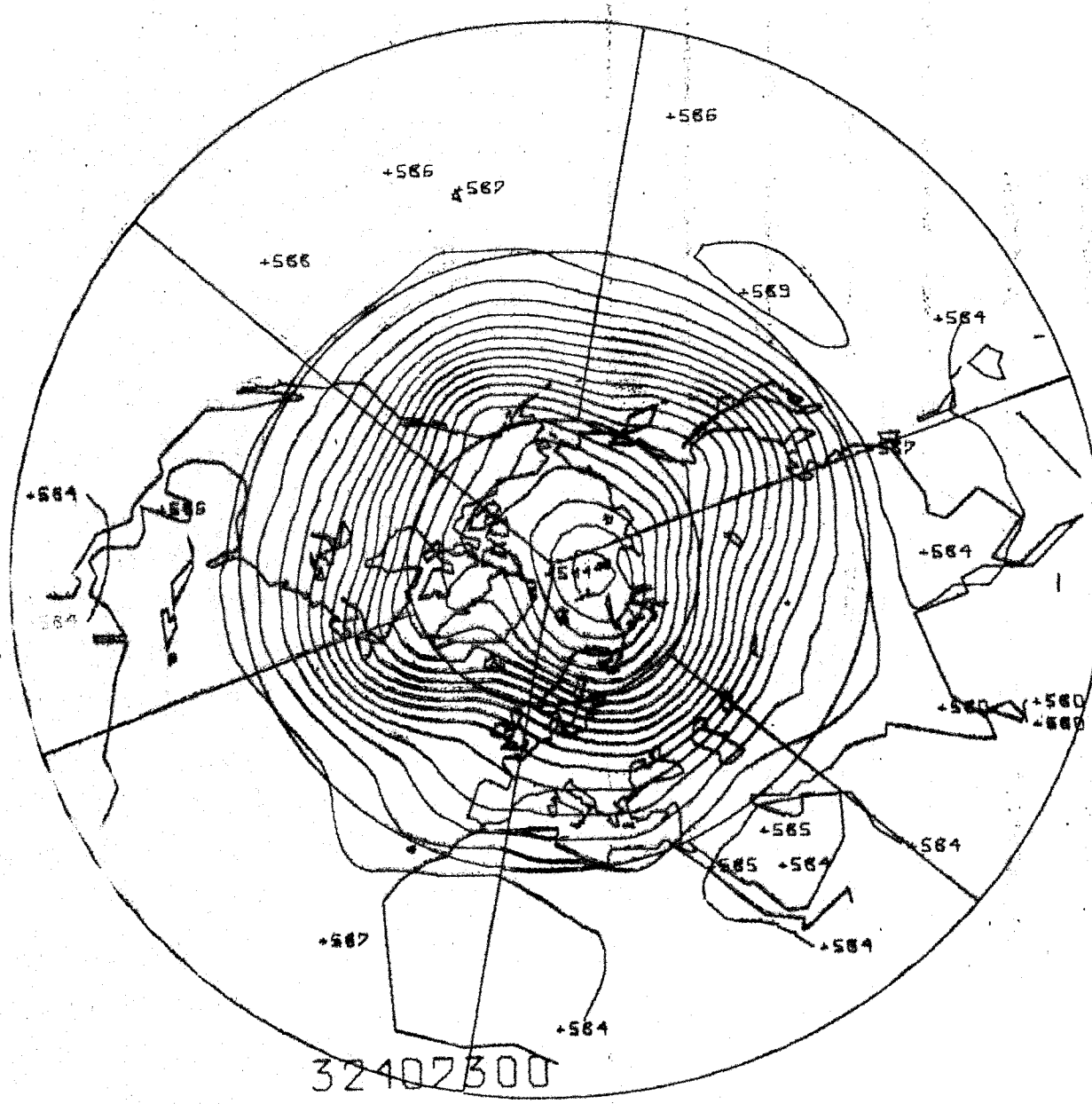


FIG. 143 b

$[\Phi]_{(t)}$ 500 mb OCT. 1973



3240730

FIG. 144

$[T]_{(t)}$ 300mb OCT. 1973

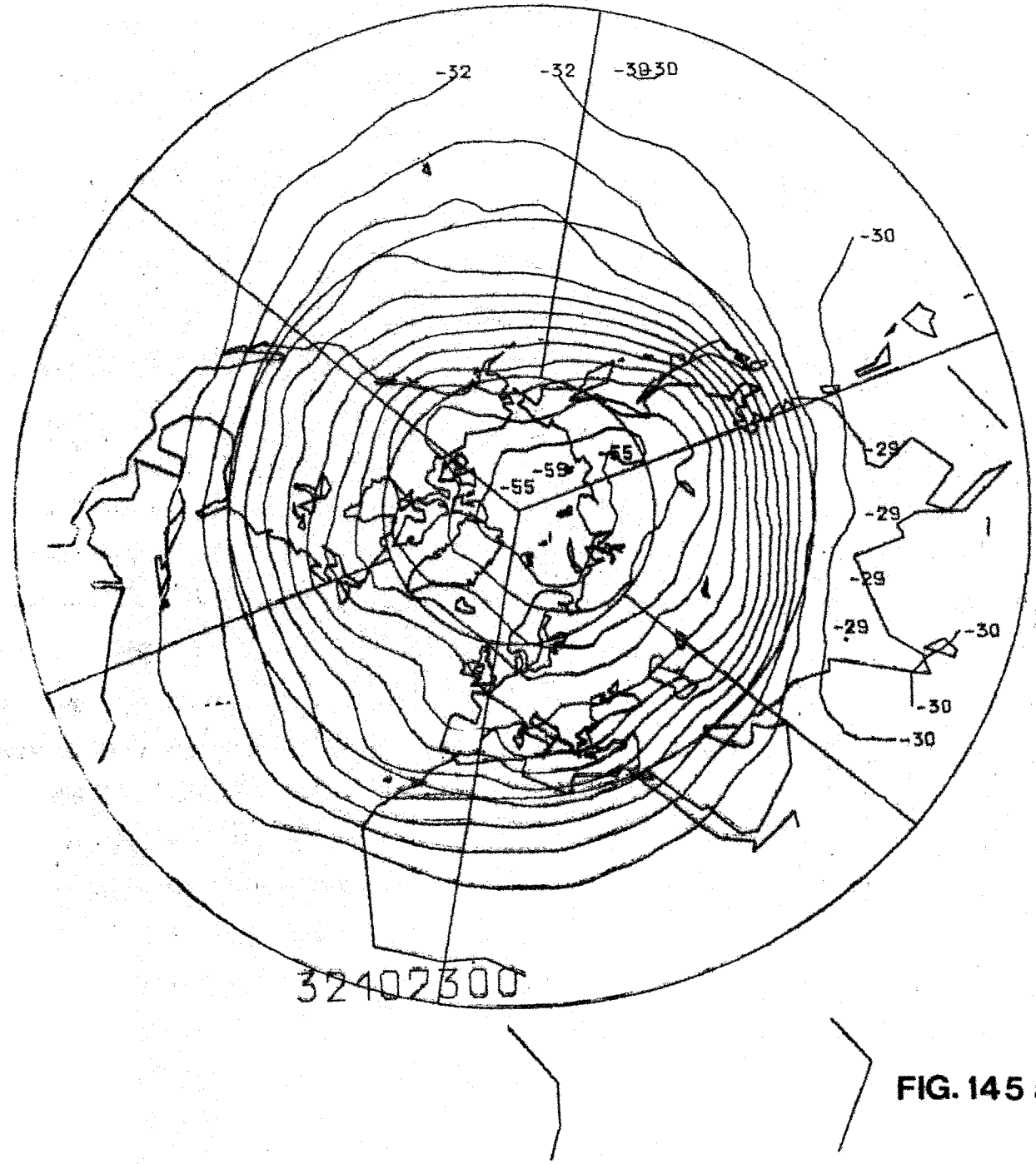
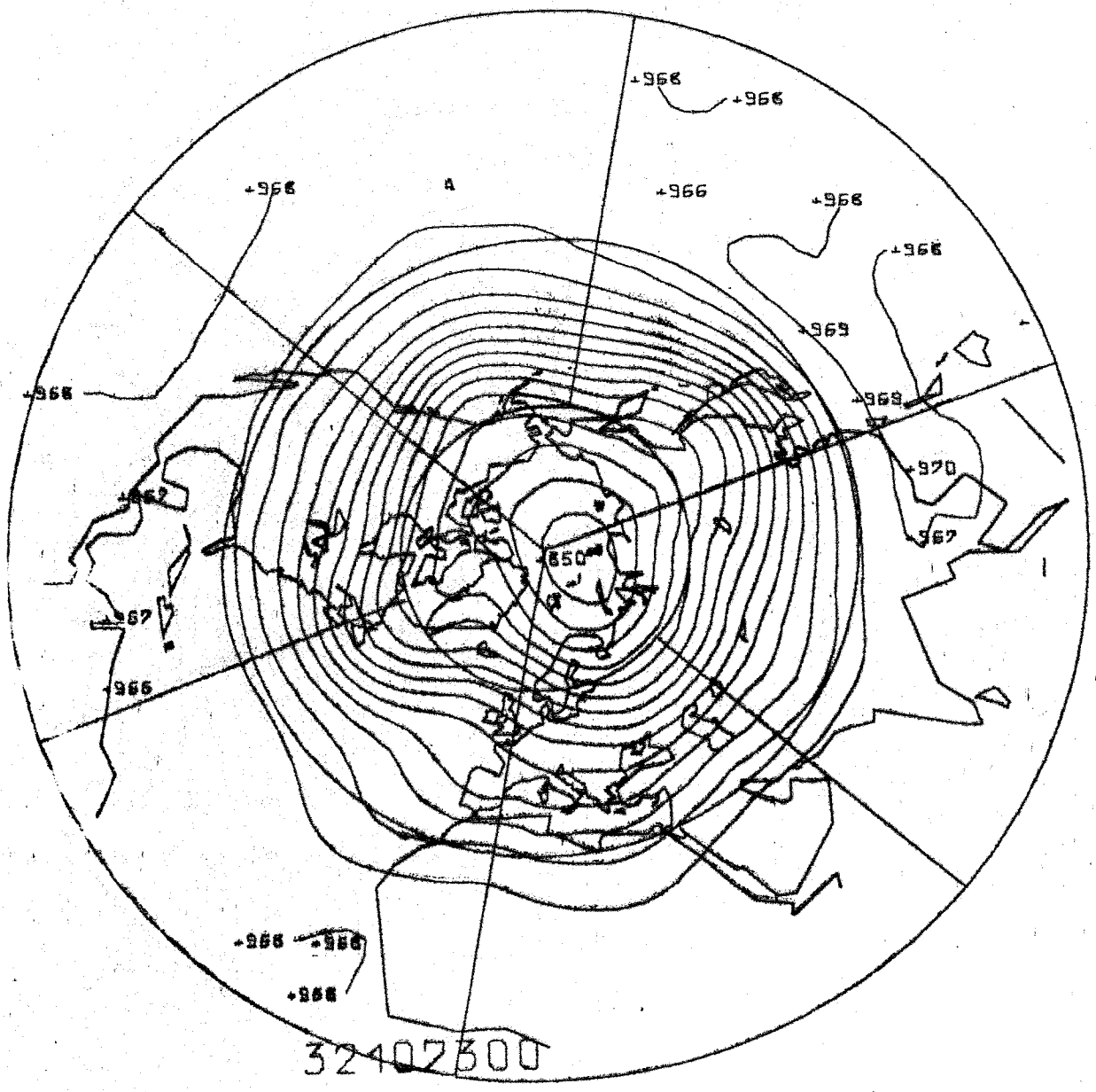


FIG. 145 a

$[\phi]_{(t)}$ 300 mb OCT. 1973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$[T]_{(t)}$ 100 mb OCT. 1973

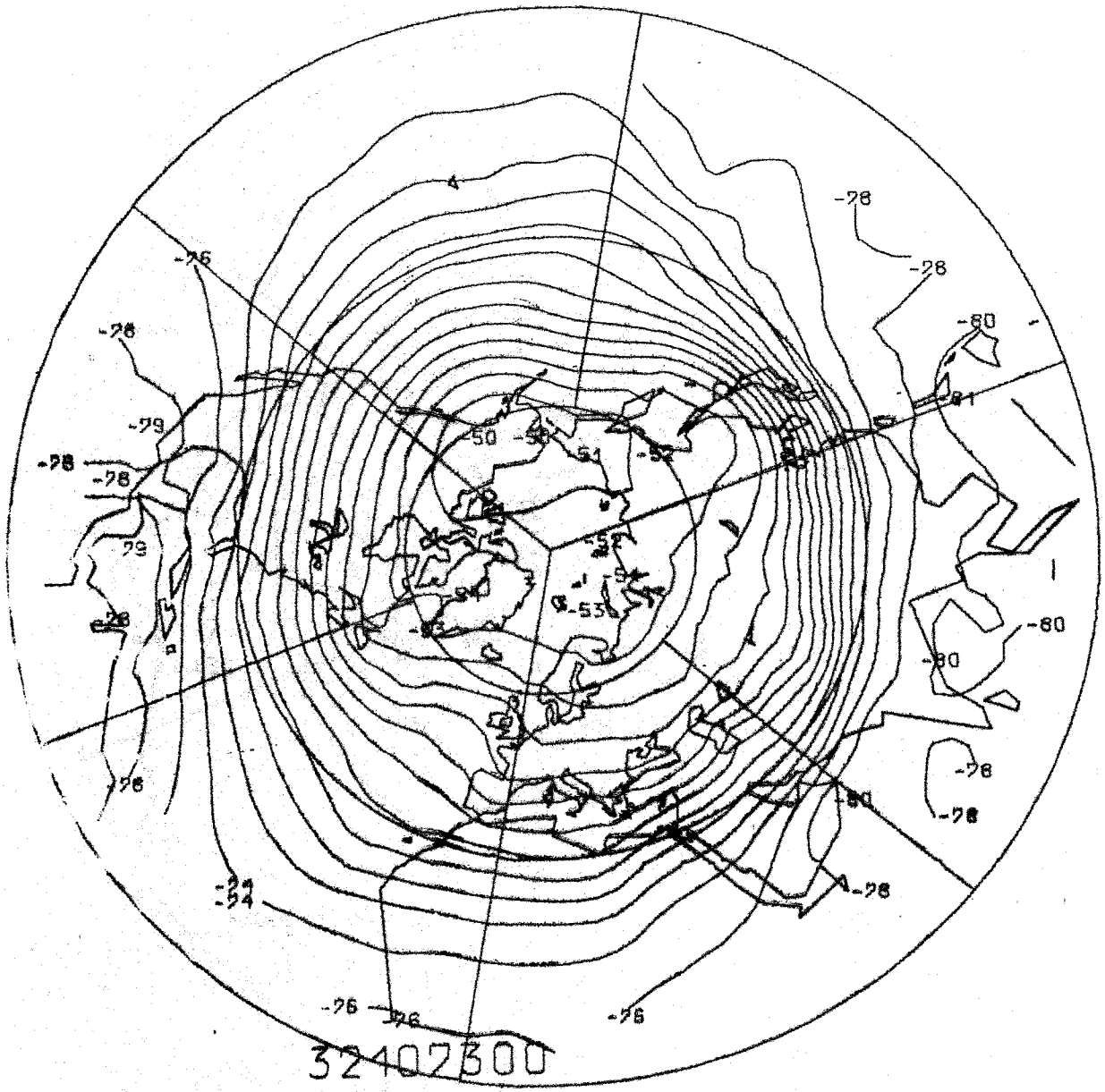


FIG. 146 a

$[\phi]_{(t)}$ 100 mb OCT. 1973

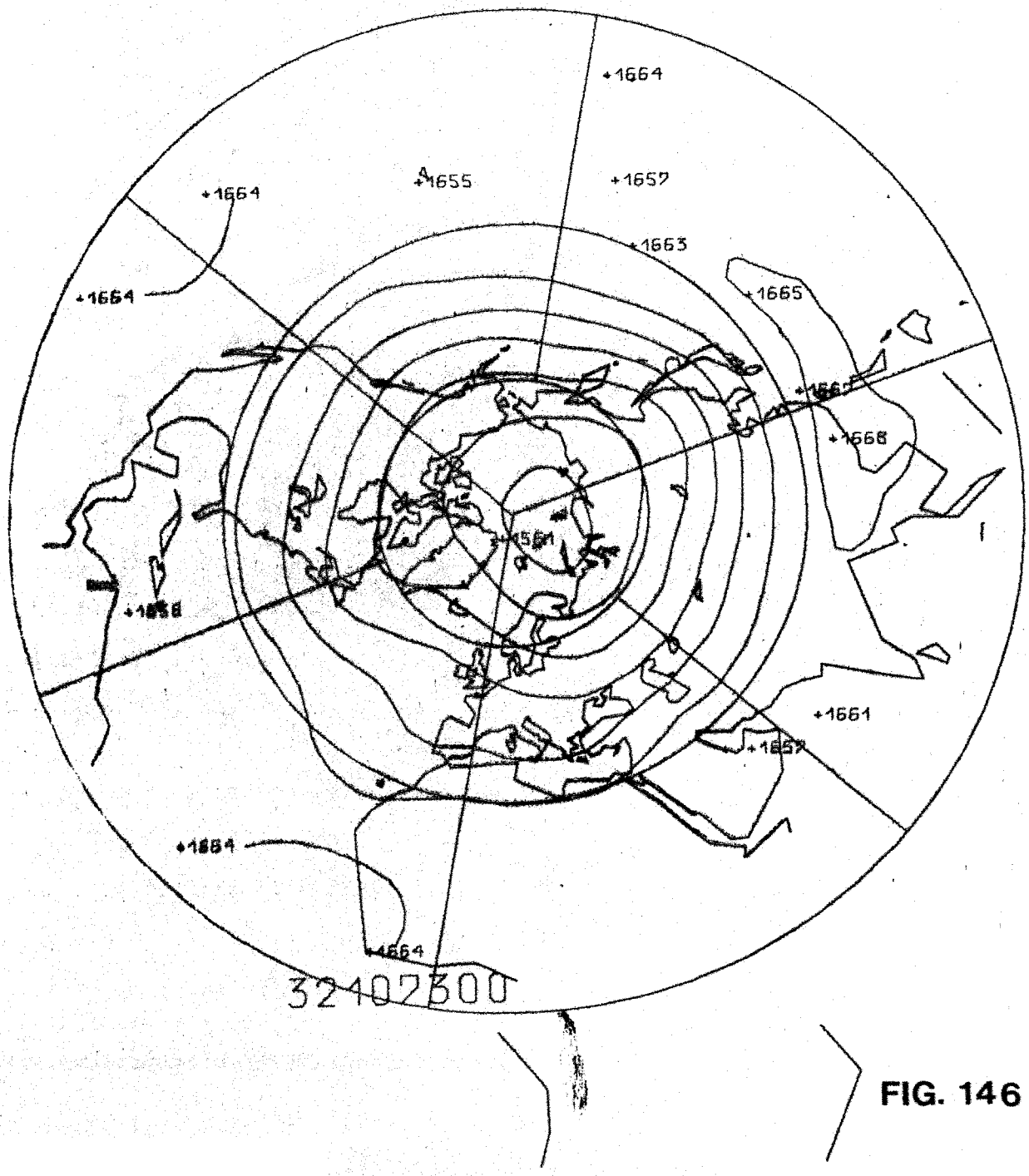


FIG. 146 b

$[T]_{(t)}$ 850 mb OCT. 1974

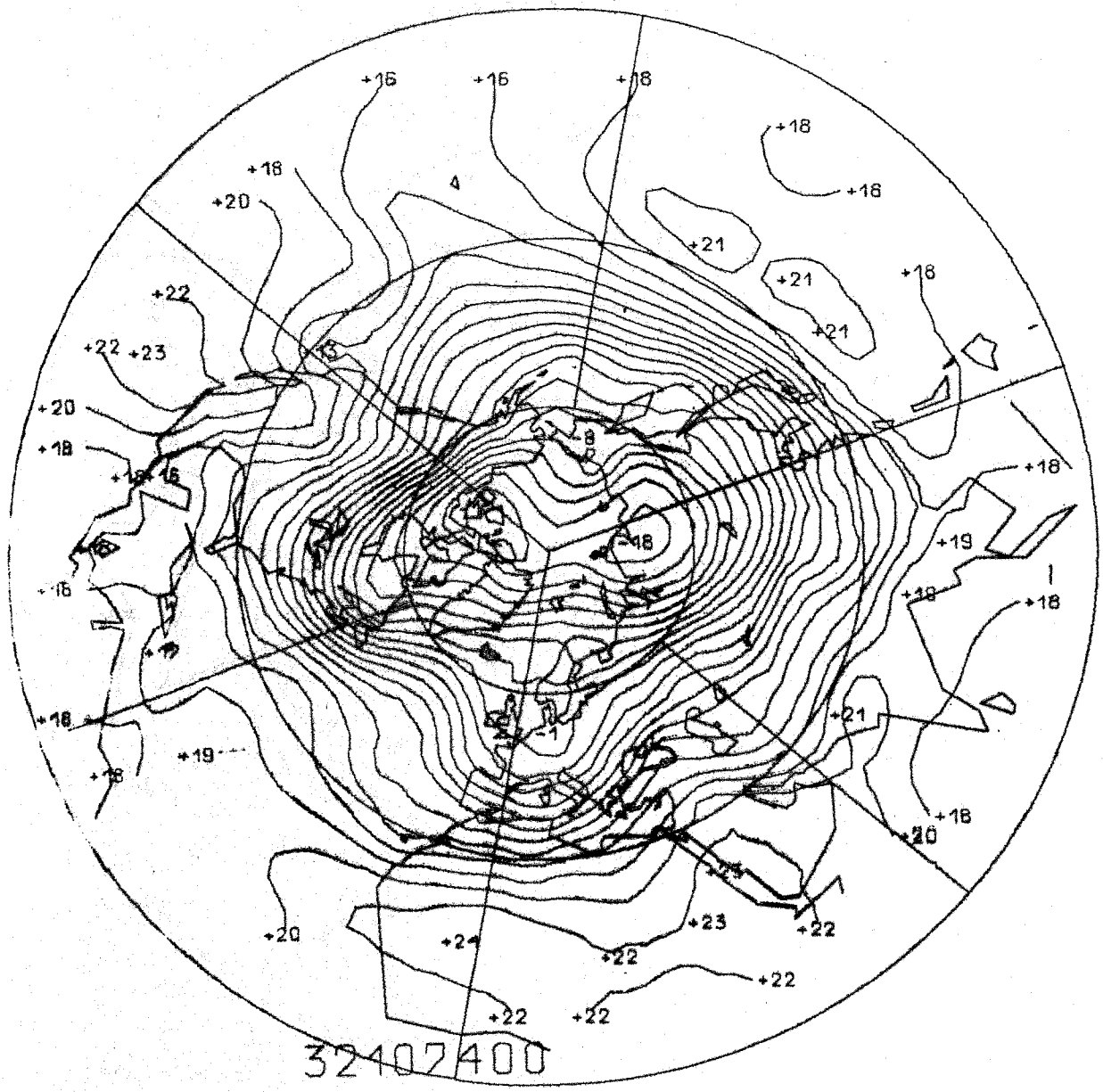


FIG. 147 a

$[\phi]_{(t)}$ 850 mb OCT. 1974

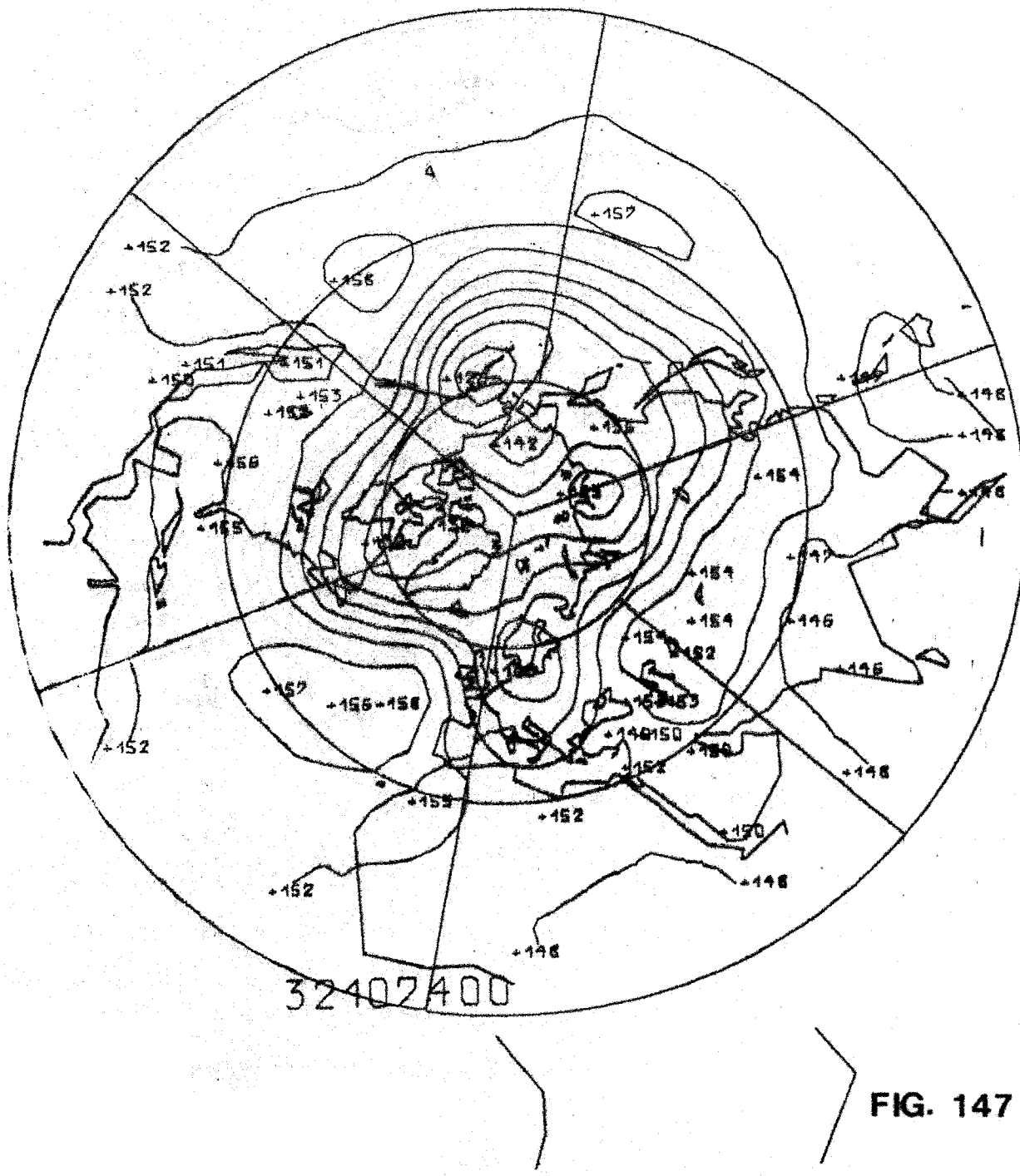


FIG. 147 b

$[\phi]_{(t)}$ 500mb OCT. 1974

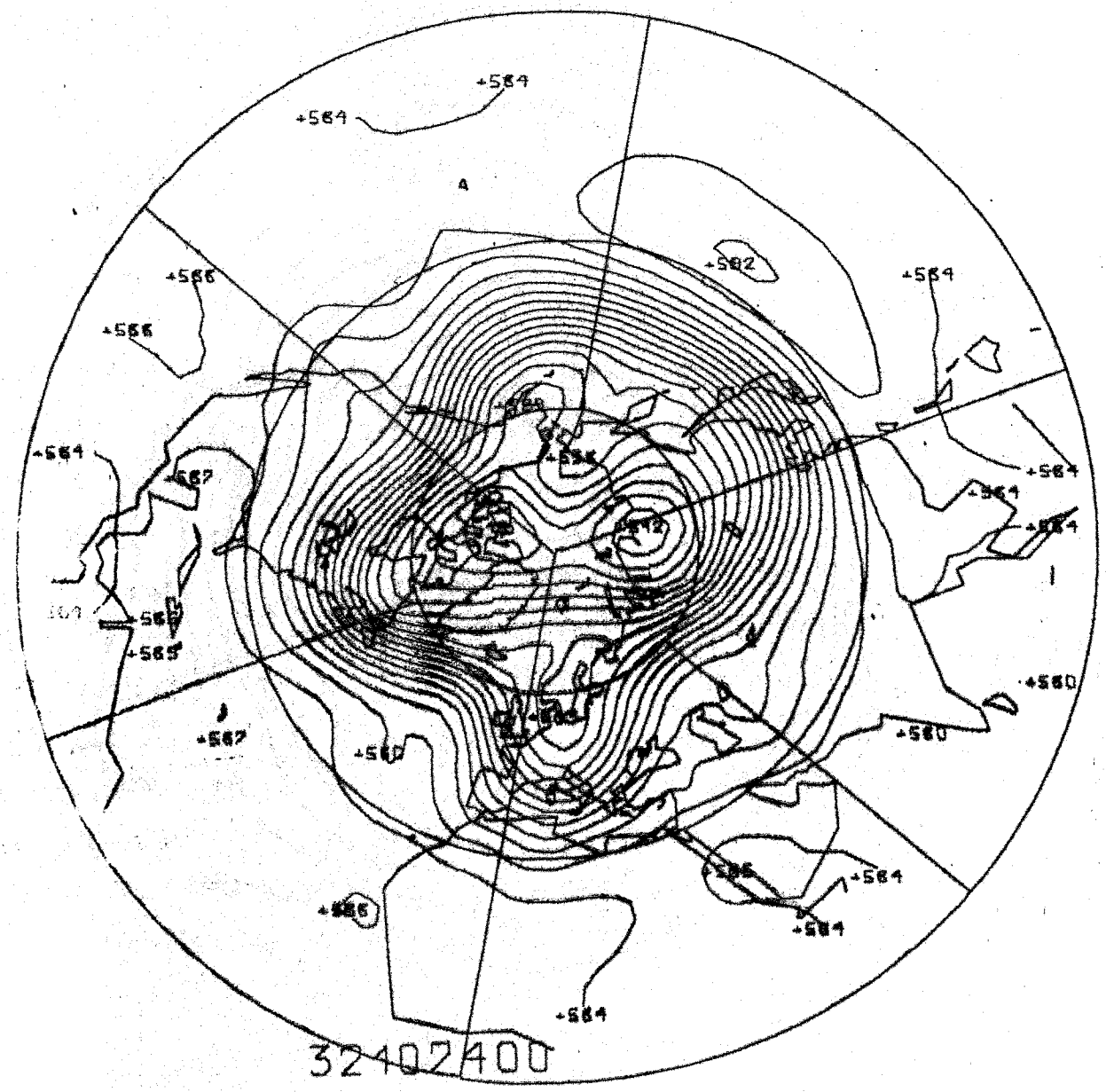


FIG. 148

$[T]_{(t)}$ 300 mb OCT. 1974

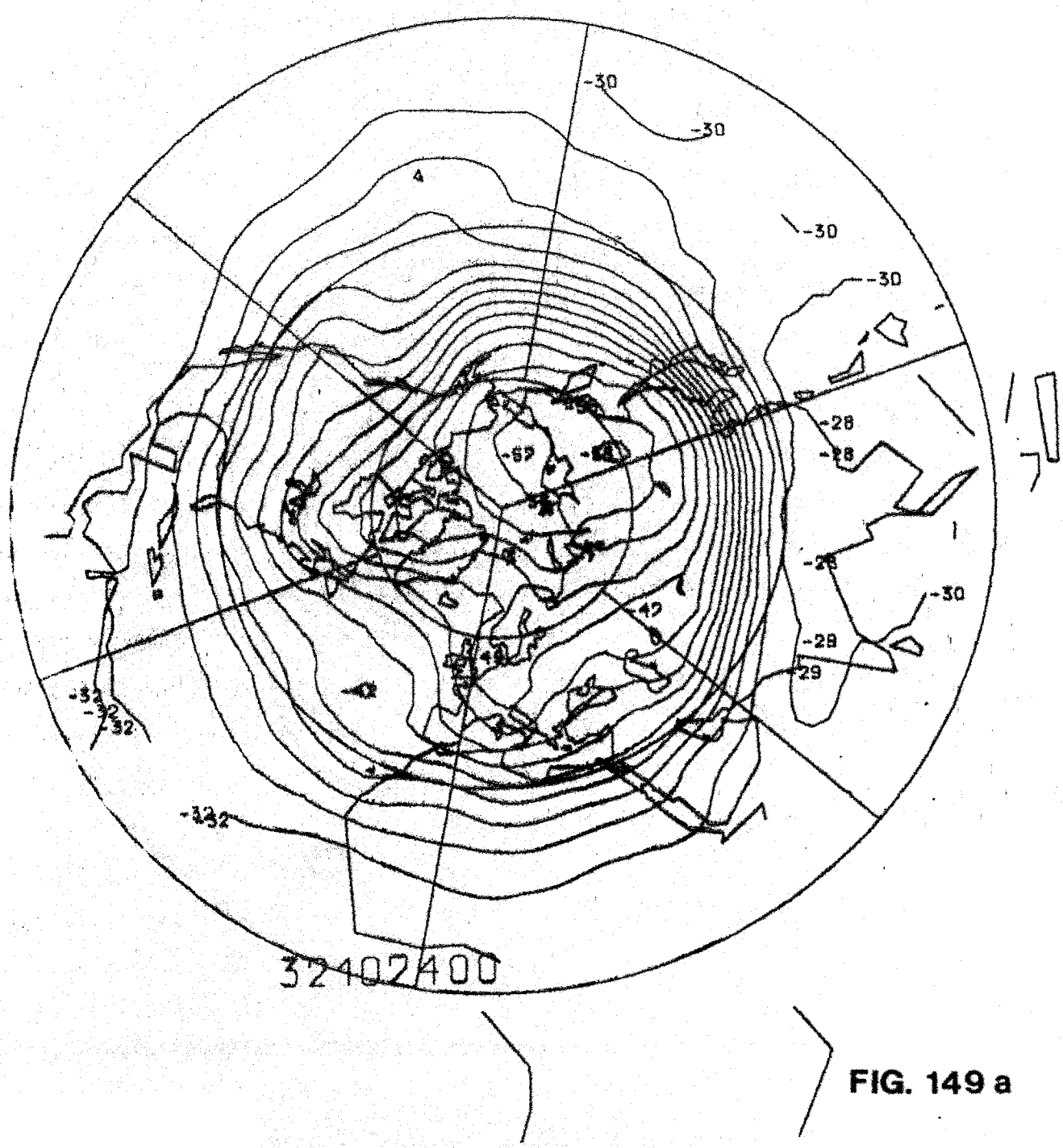
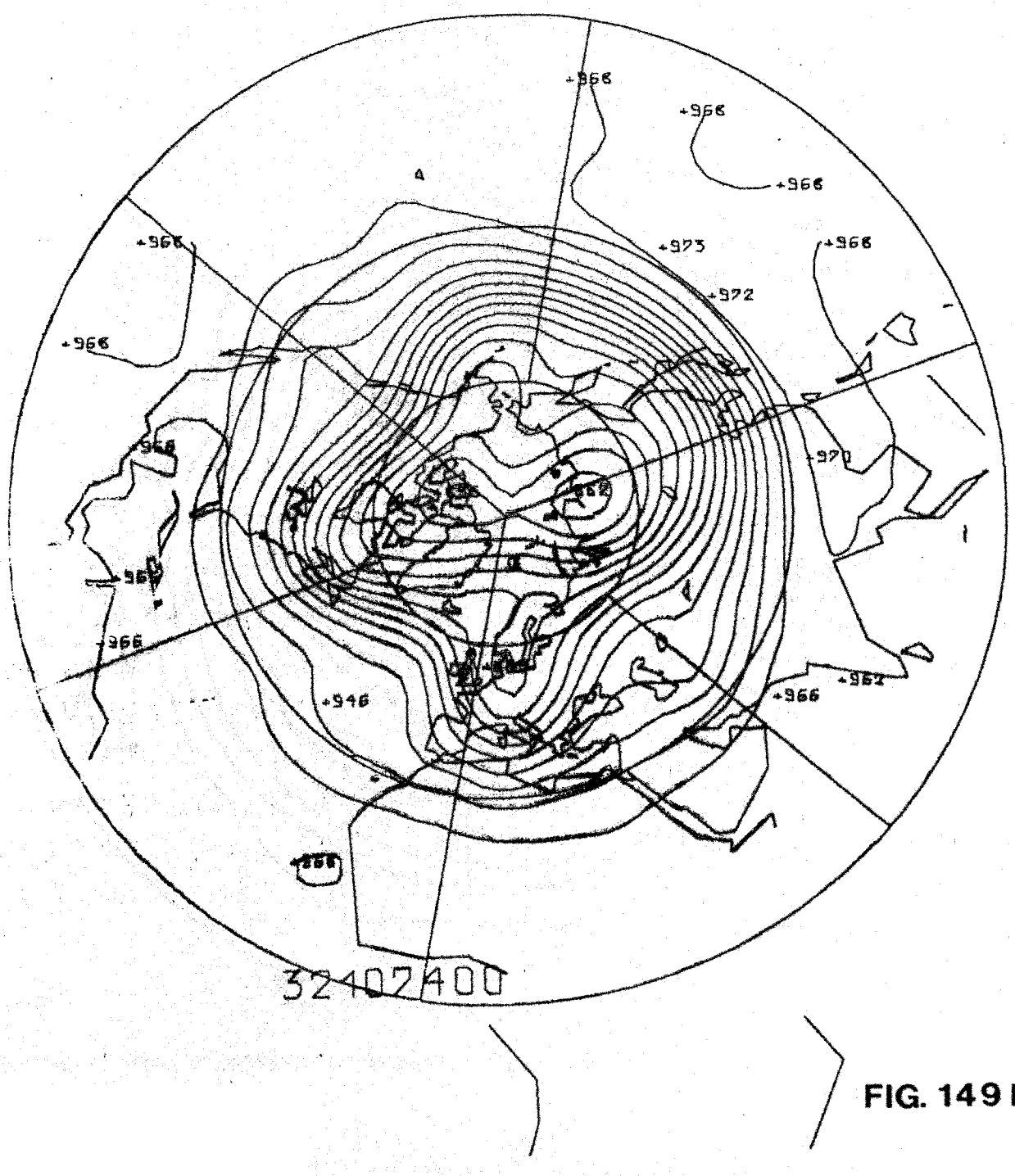


FIG. 149 a

$[\phi]_{(t)}$ 300 mb OCT. 1974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$[T]_{(t)}$ 100 mb OCT. 1974

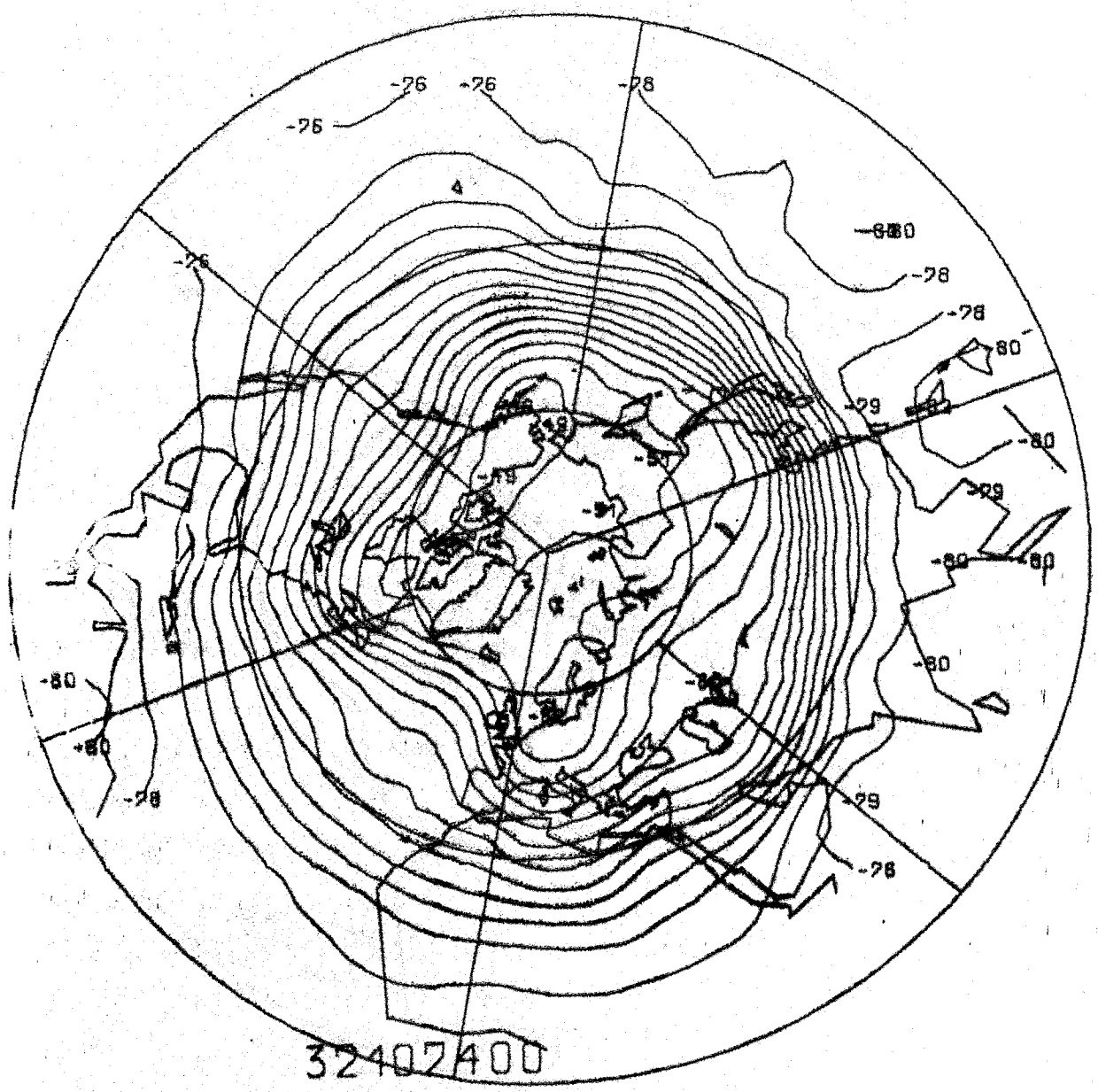


FIG. 150 a

$[\Phi]_{(t)}$ 100mb OCT. 1974

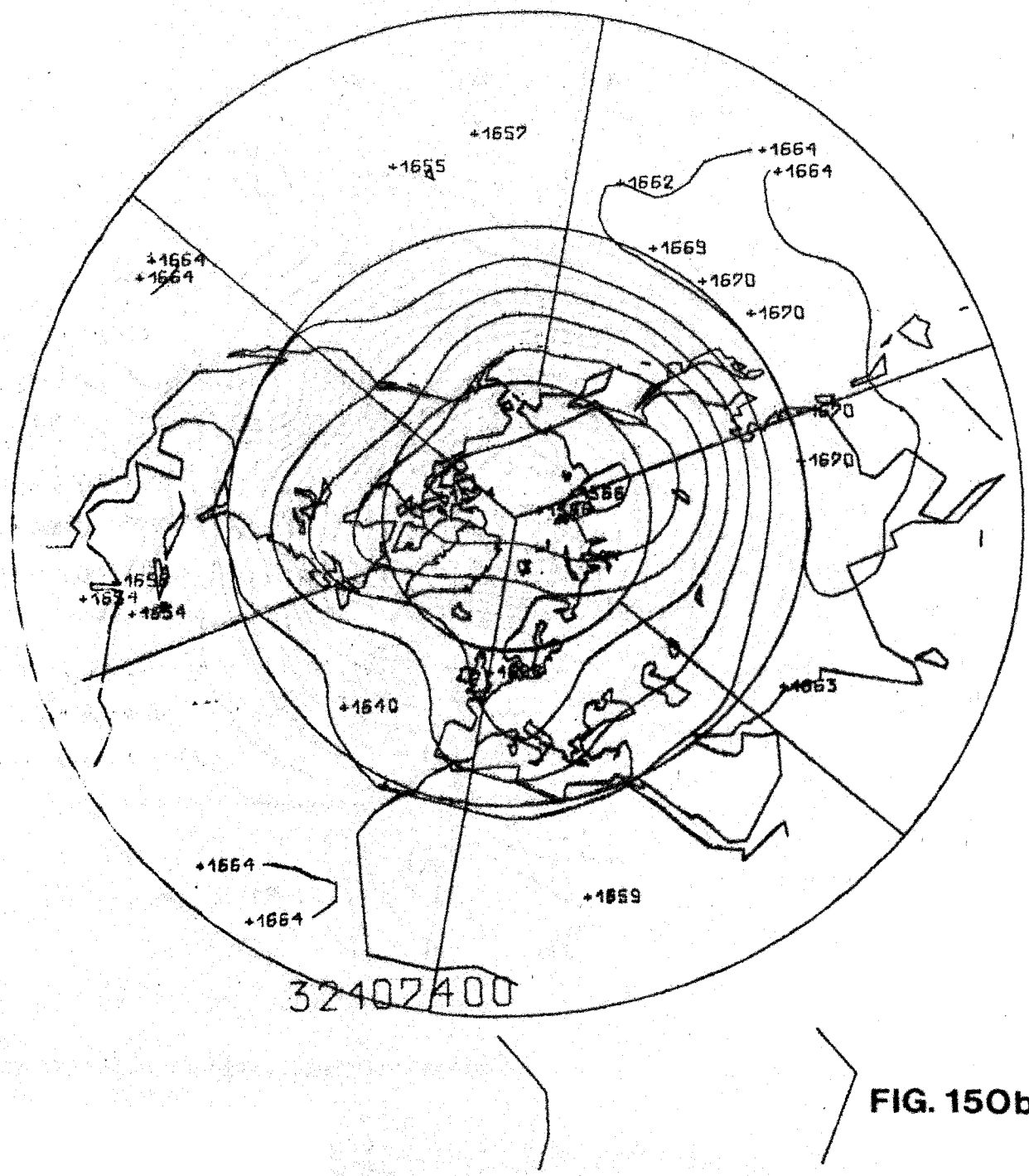


FIG. 150b

$[T]_{(t)}$ 850 mb OCT. 1975

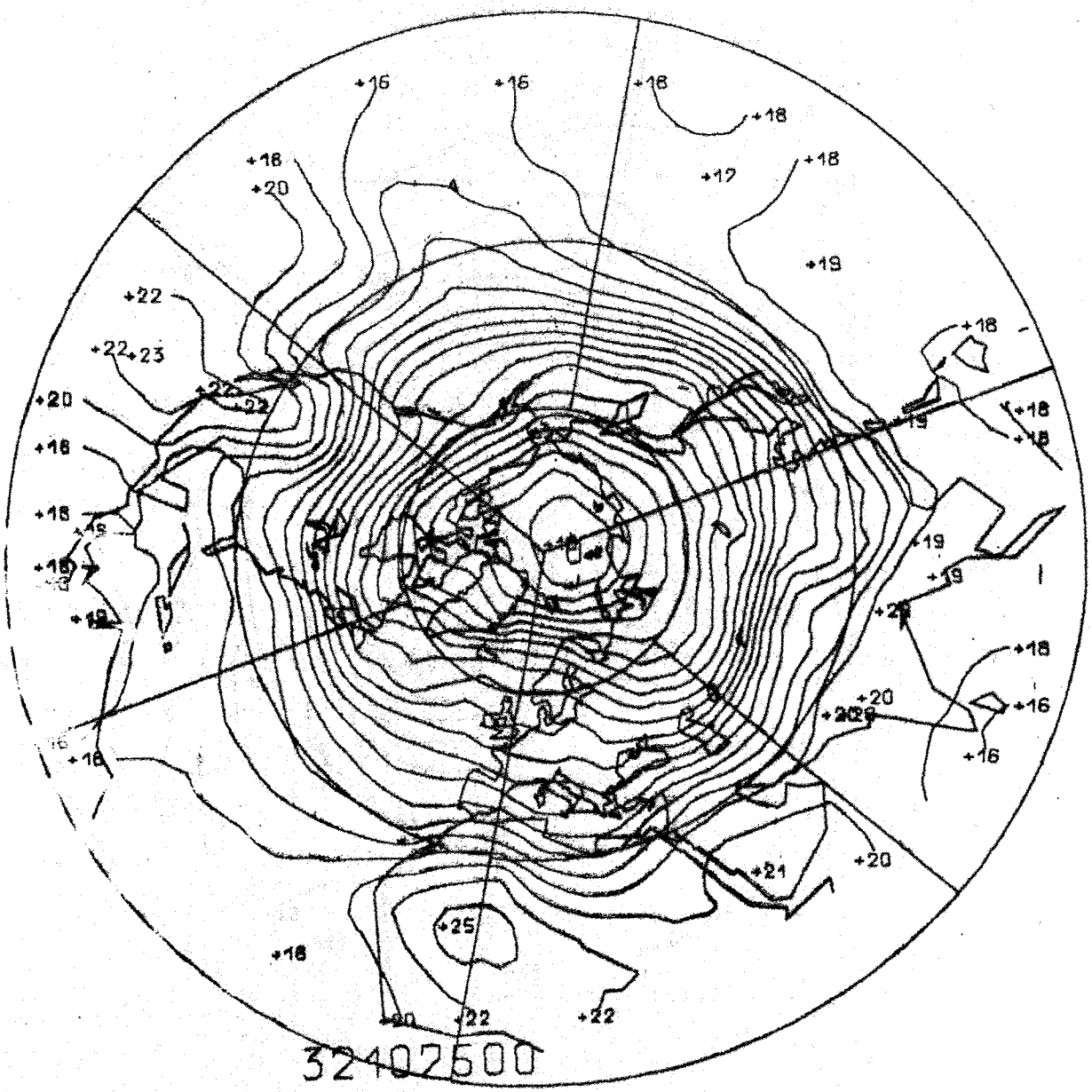


FIG. 151 a

$[\phi]_{(t)}$ 850mb OCT. 1975

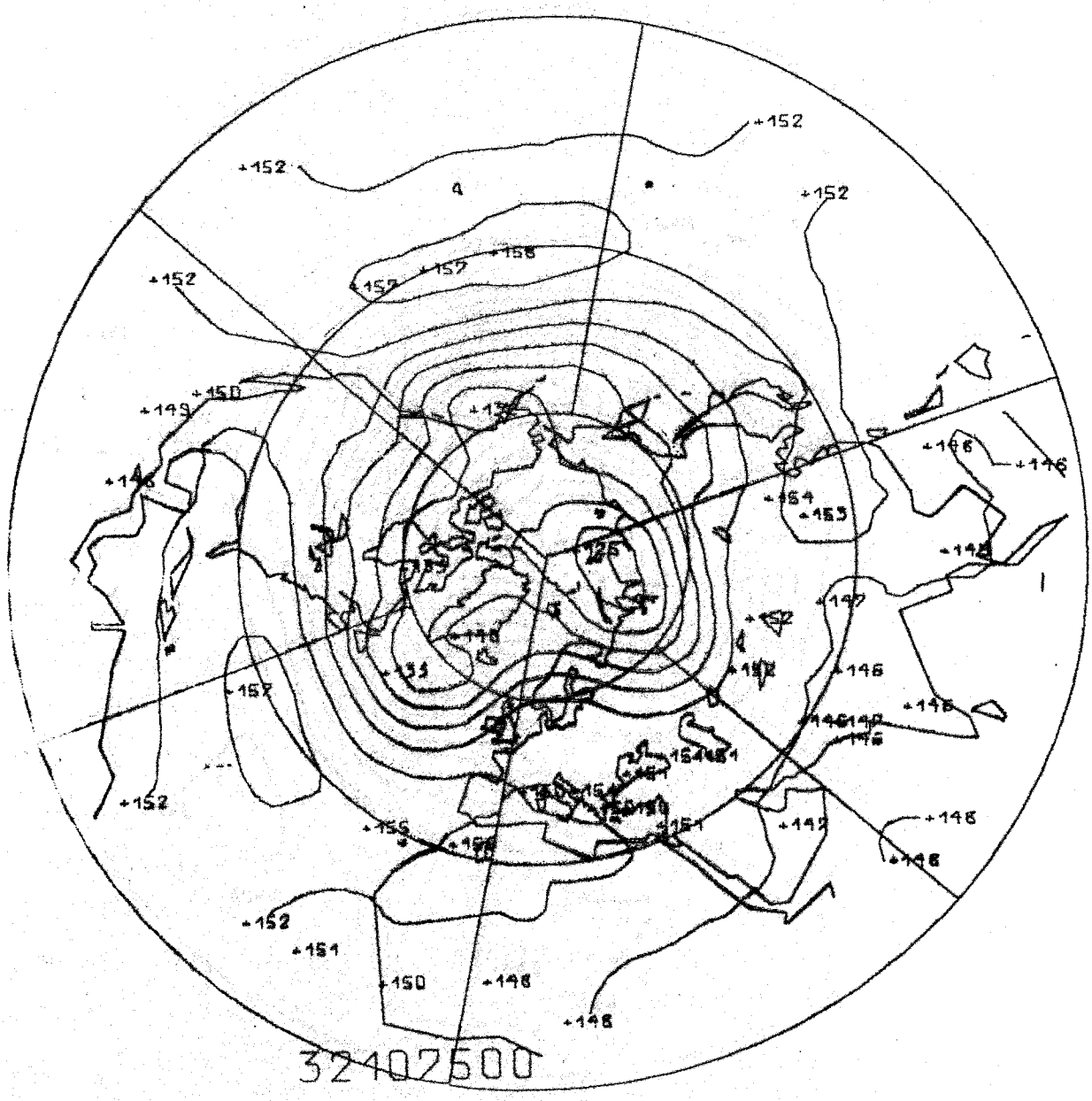


FIG. 151 b

$[\phi]_{(t)}$ 500mb OCT. 1975

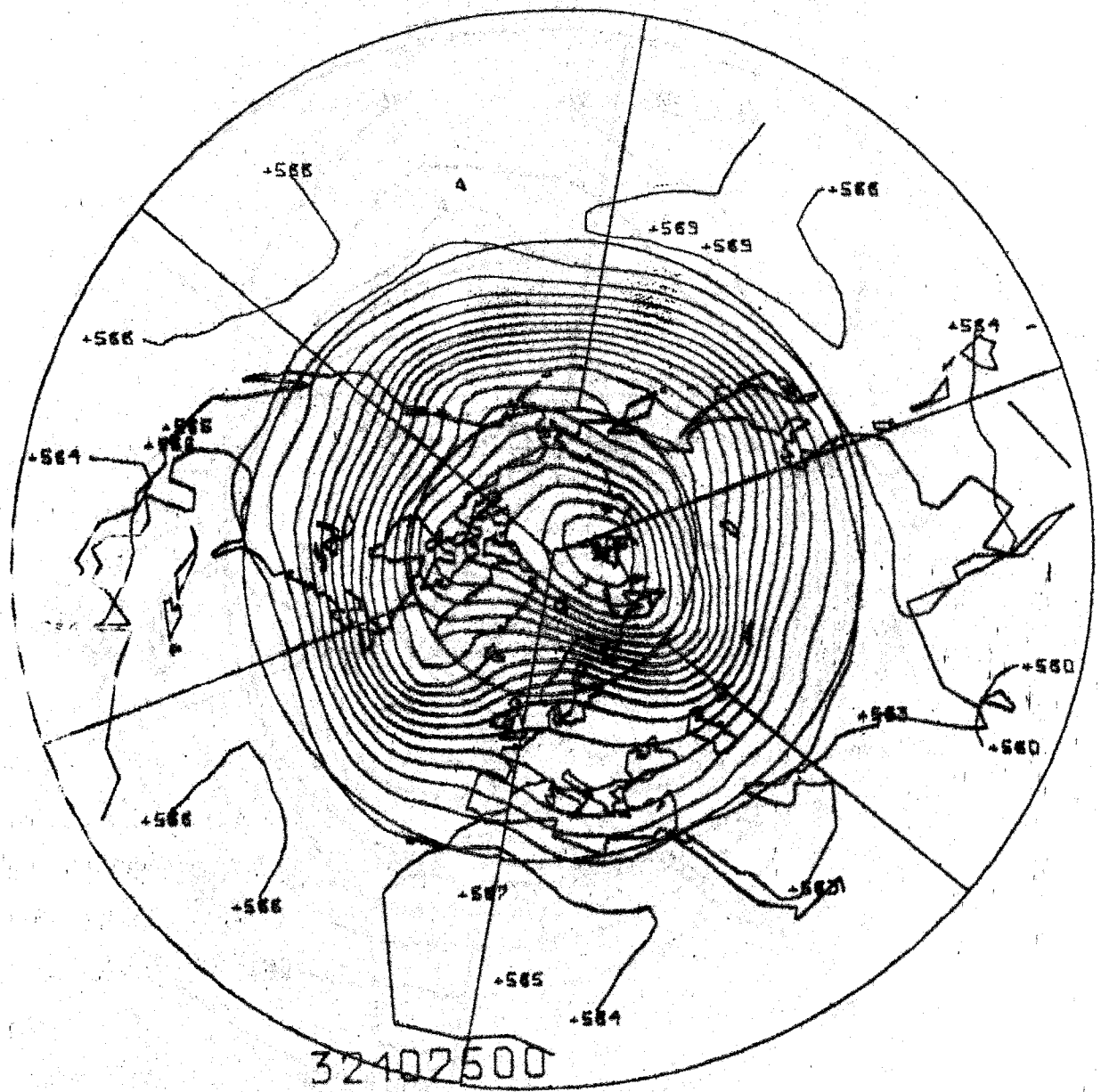


FIG. 152

$[T]_{(t)}$ 300 mb OCT. 1975

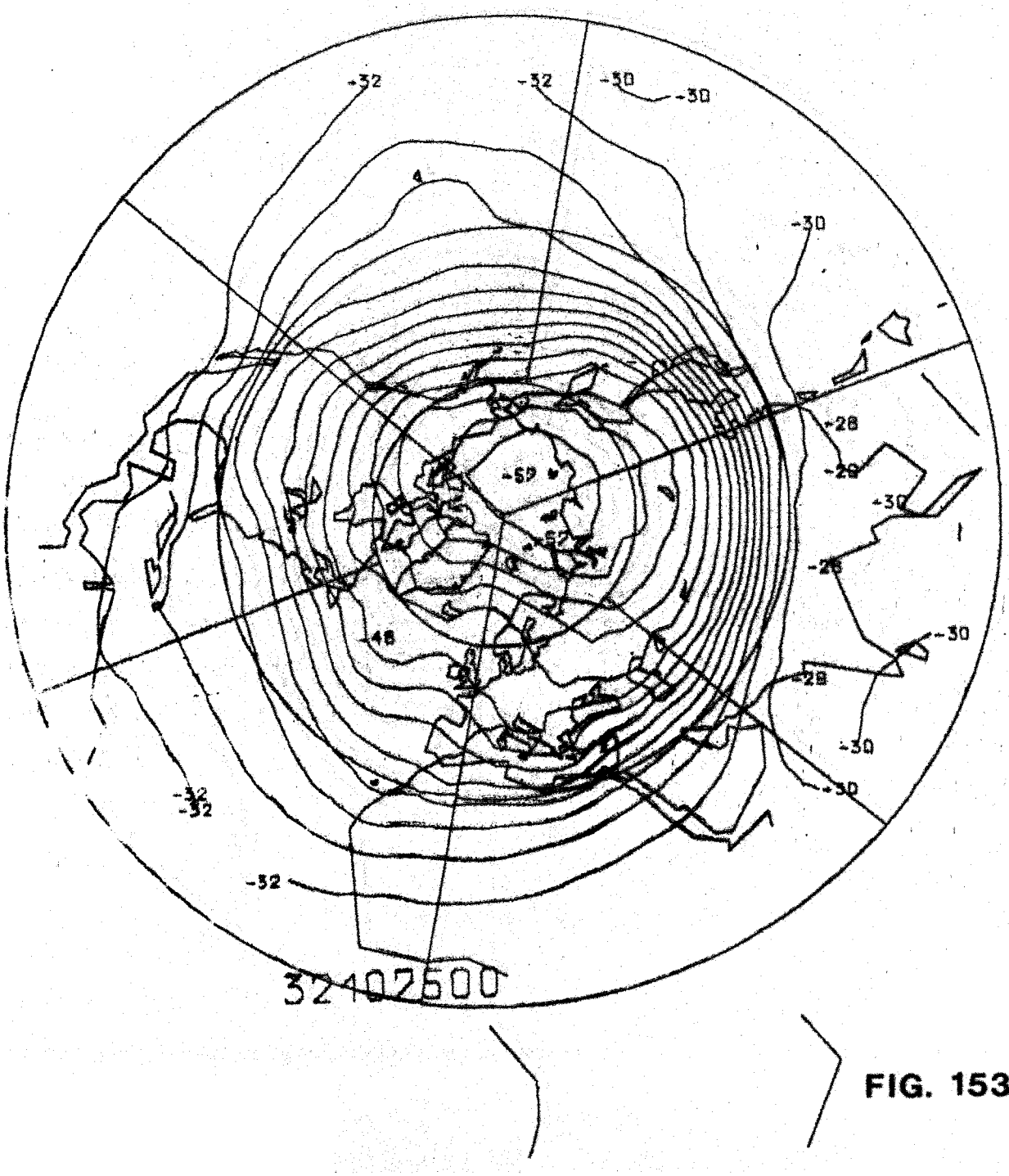


FIG. 153a

$[\Phi]_{(t)}$ 300 mb OCT. 1975

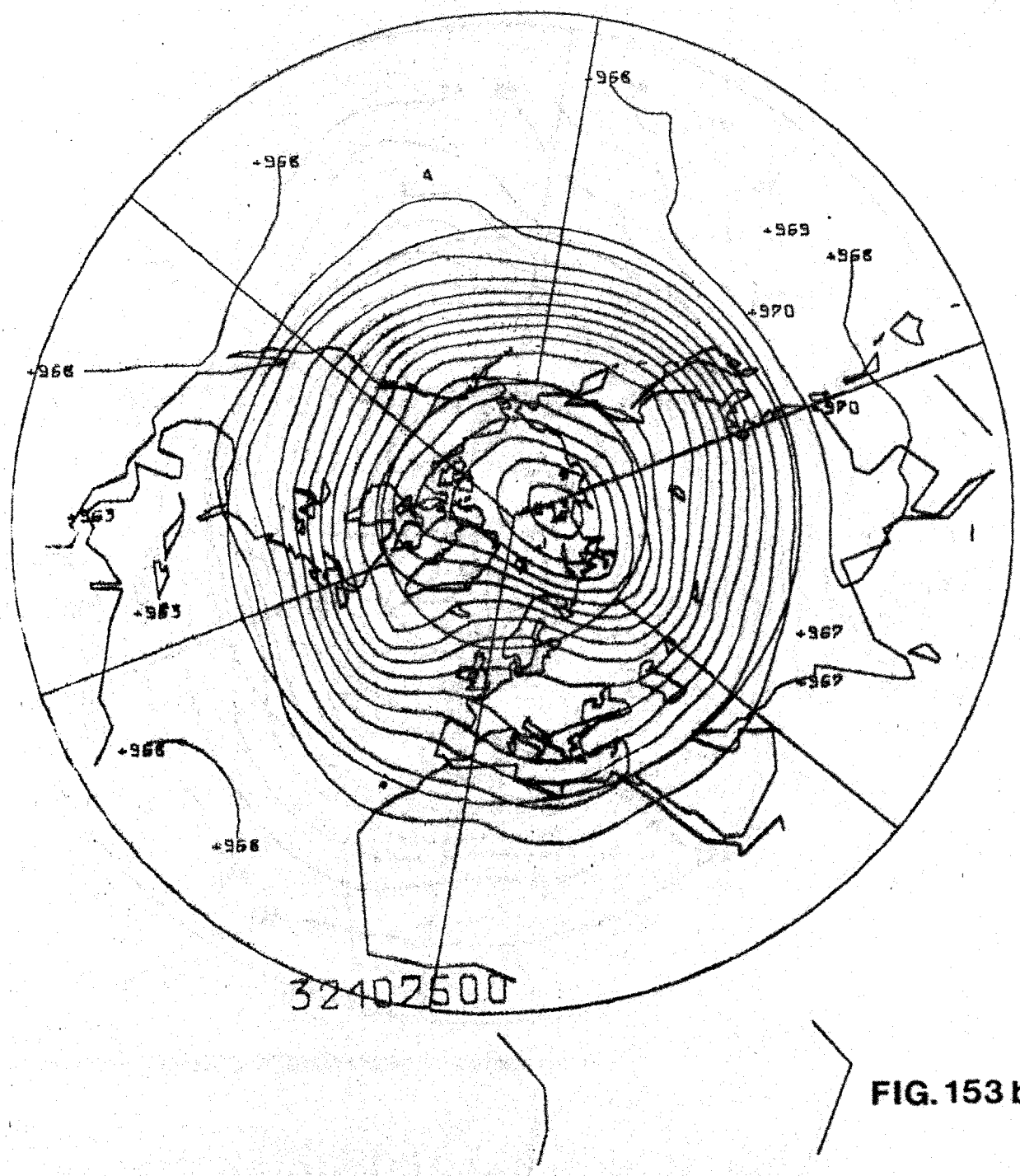


FIG. 153 b

$[T]_{(t)}$ 100 mb OCT. 1975

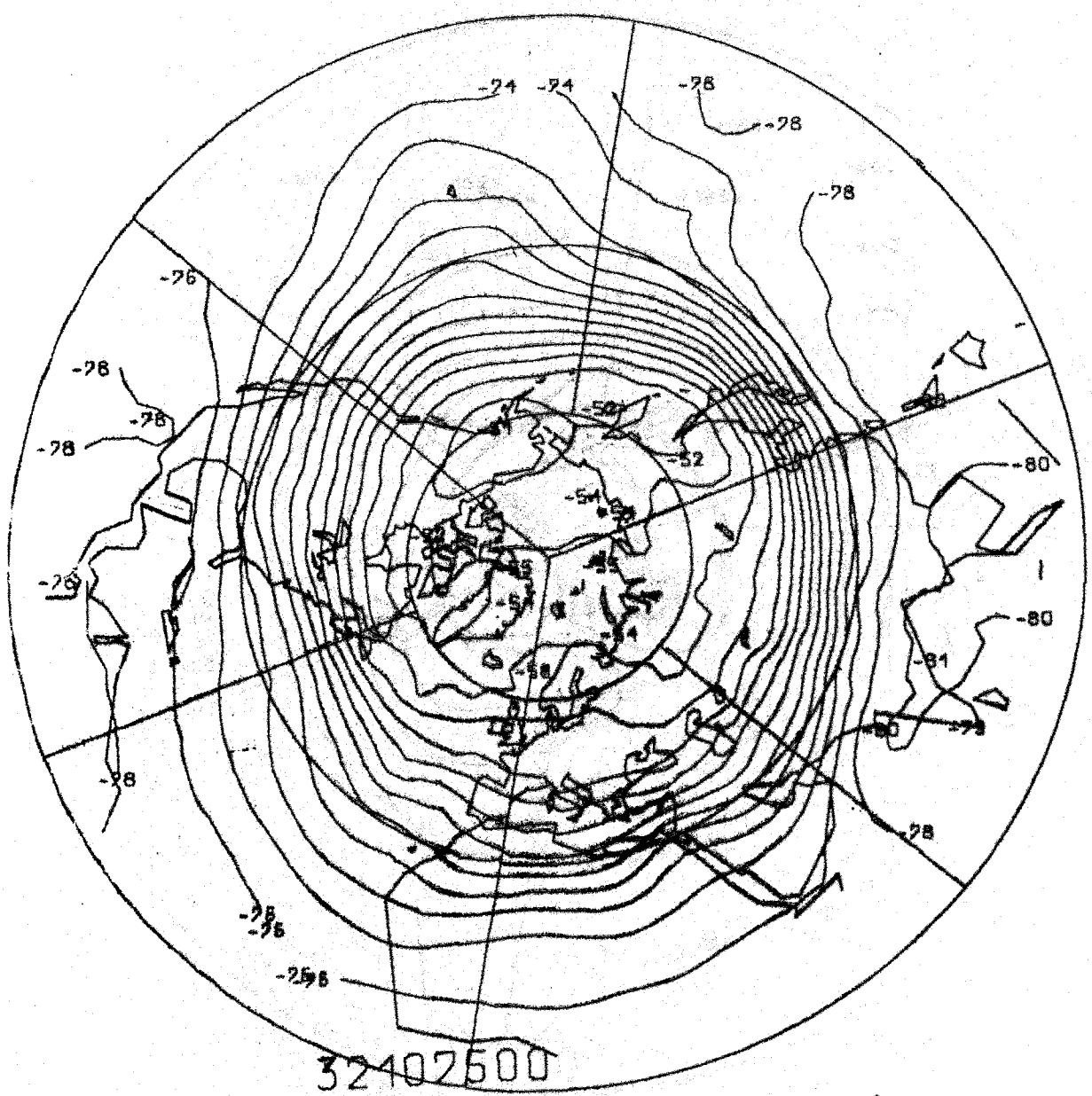


FIG.154a

$[\phi]_{(t)}$ 100 mb OCT. 1975

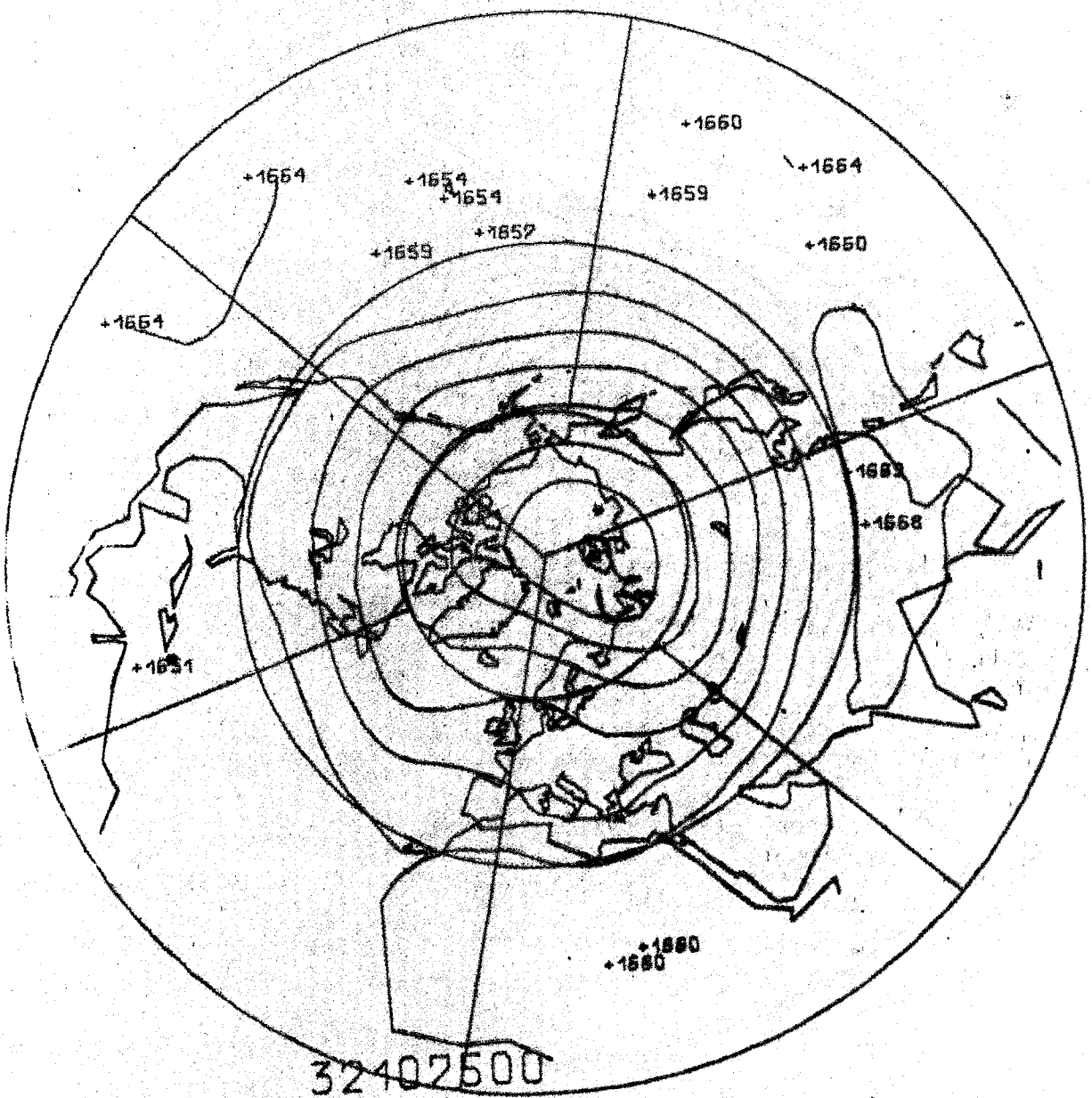


FIG. 154 b

$[T]_{(t)}$ 850mb OCT. 1976

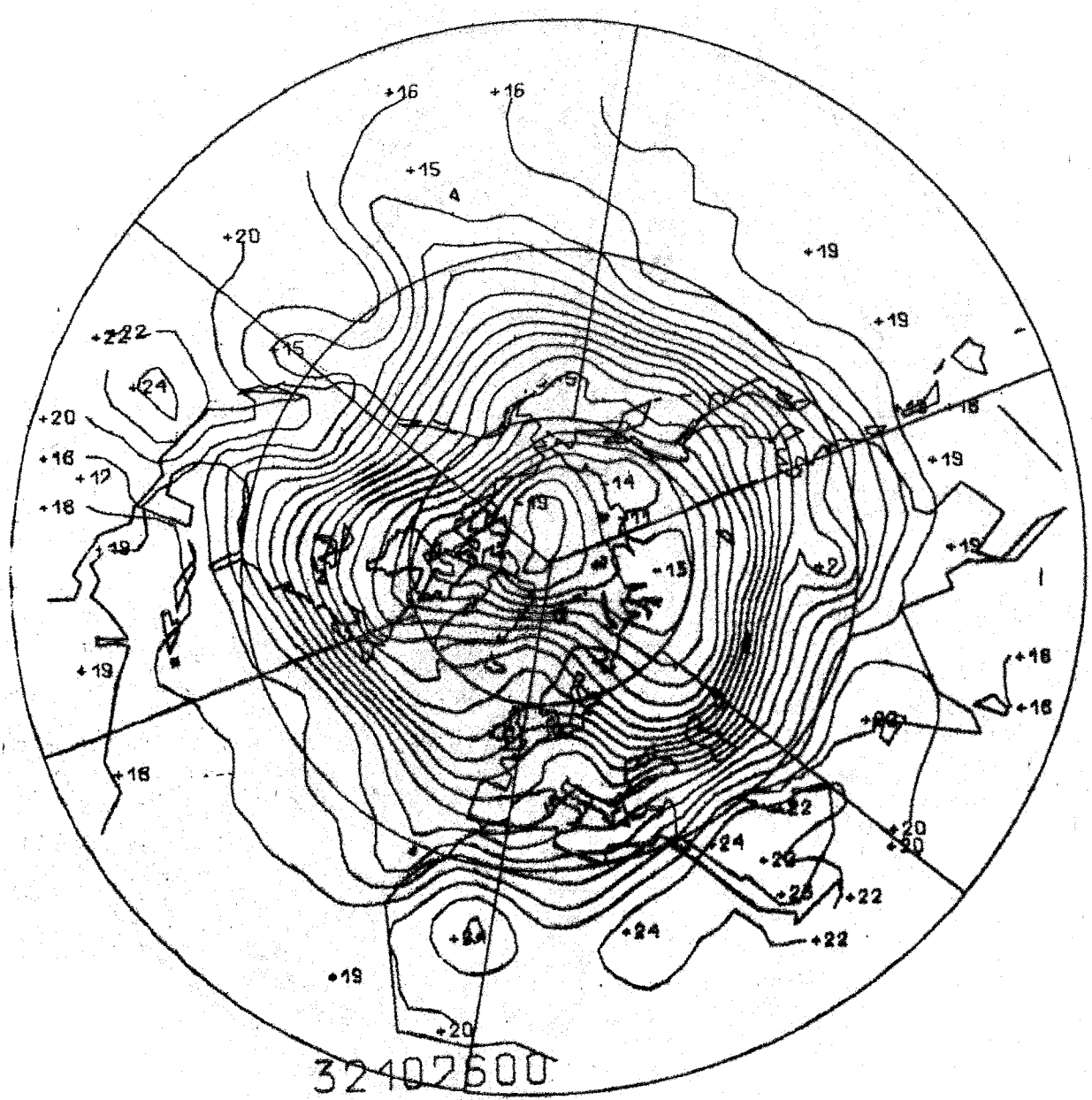


FIG. 155 a

$[\phi]_{(t)}$ 850 mb OCT. 1976

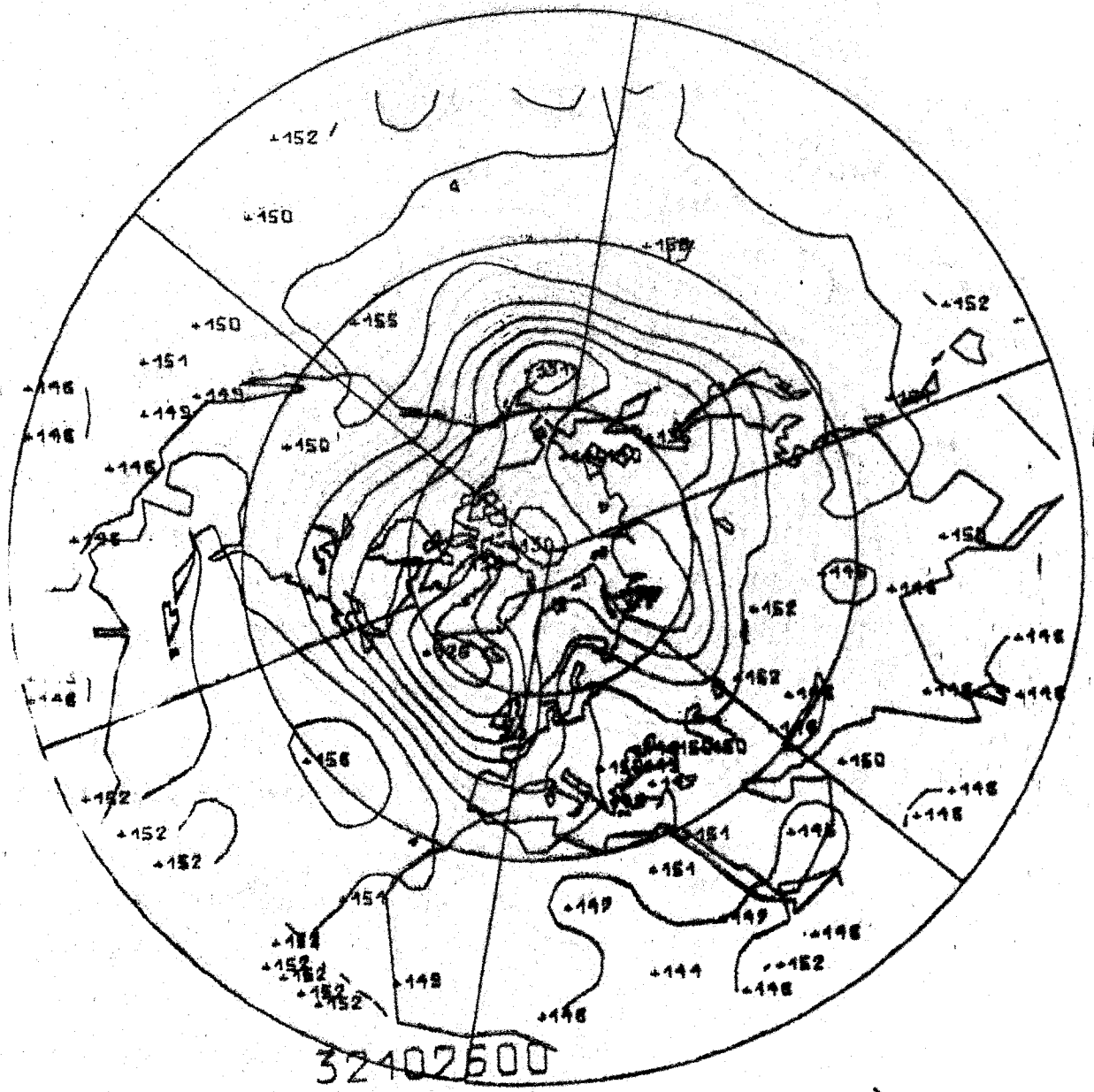
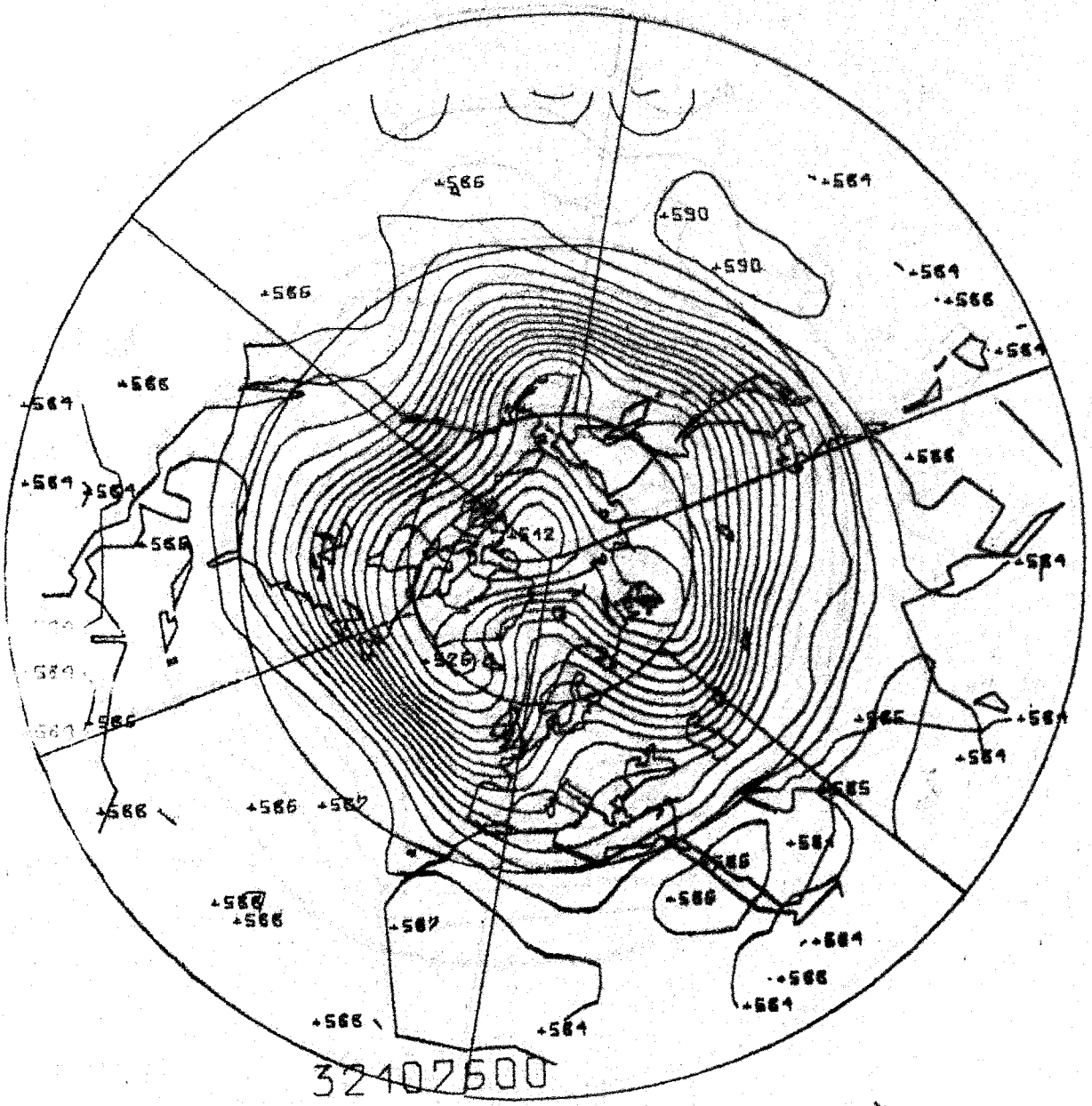


FIG. 155 b

$[\phi]_{(t)}$ 500 mb OCT. 1976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$[T]_{(t)}$ 300 mb OCT. 1976

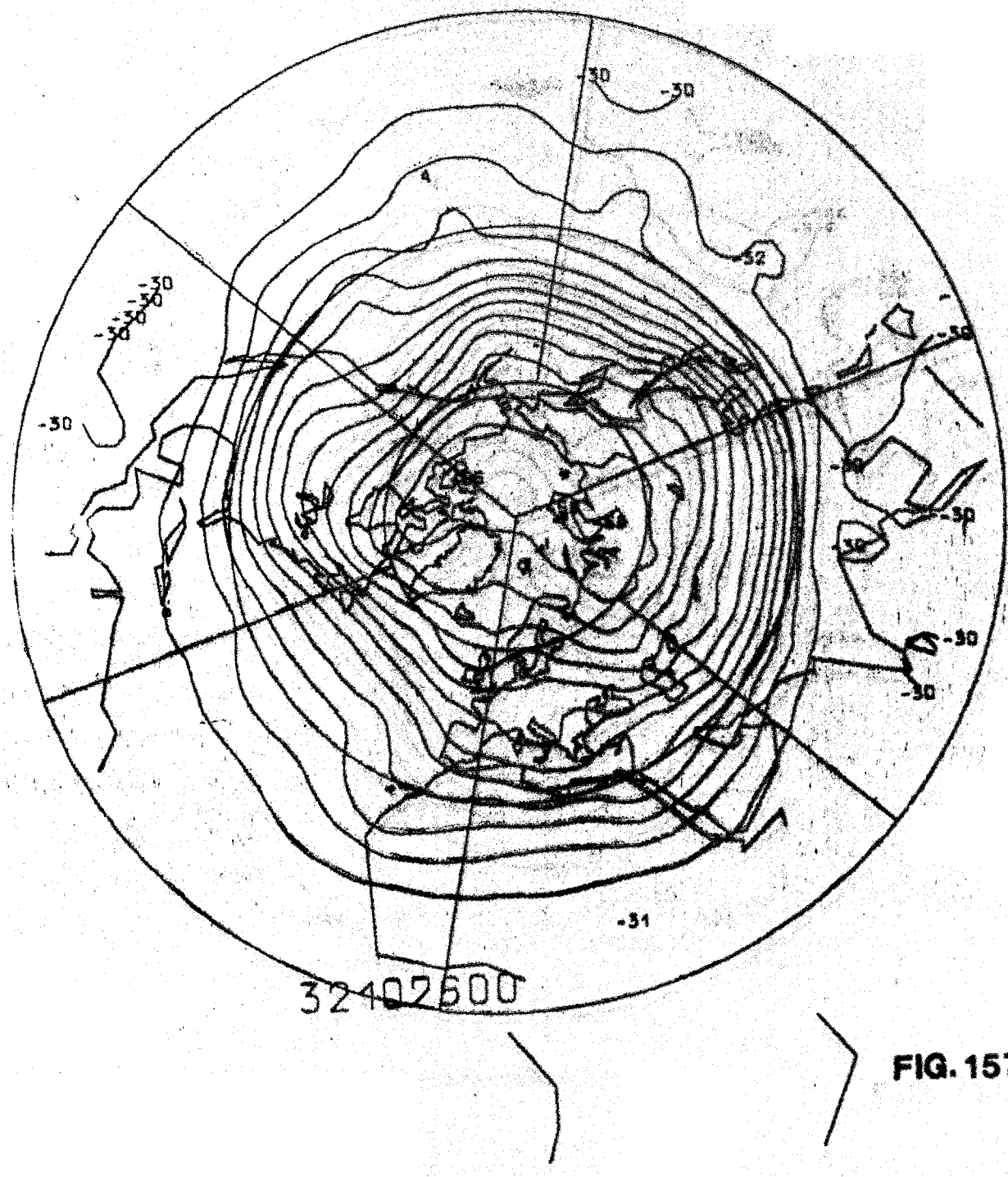

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FIG. 157a

$[\phi]_{(t)}$ 300 mb OCT. 1976

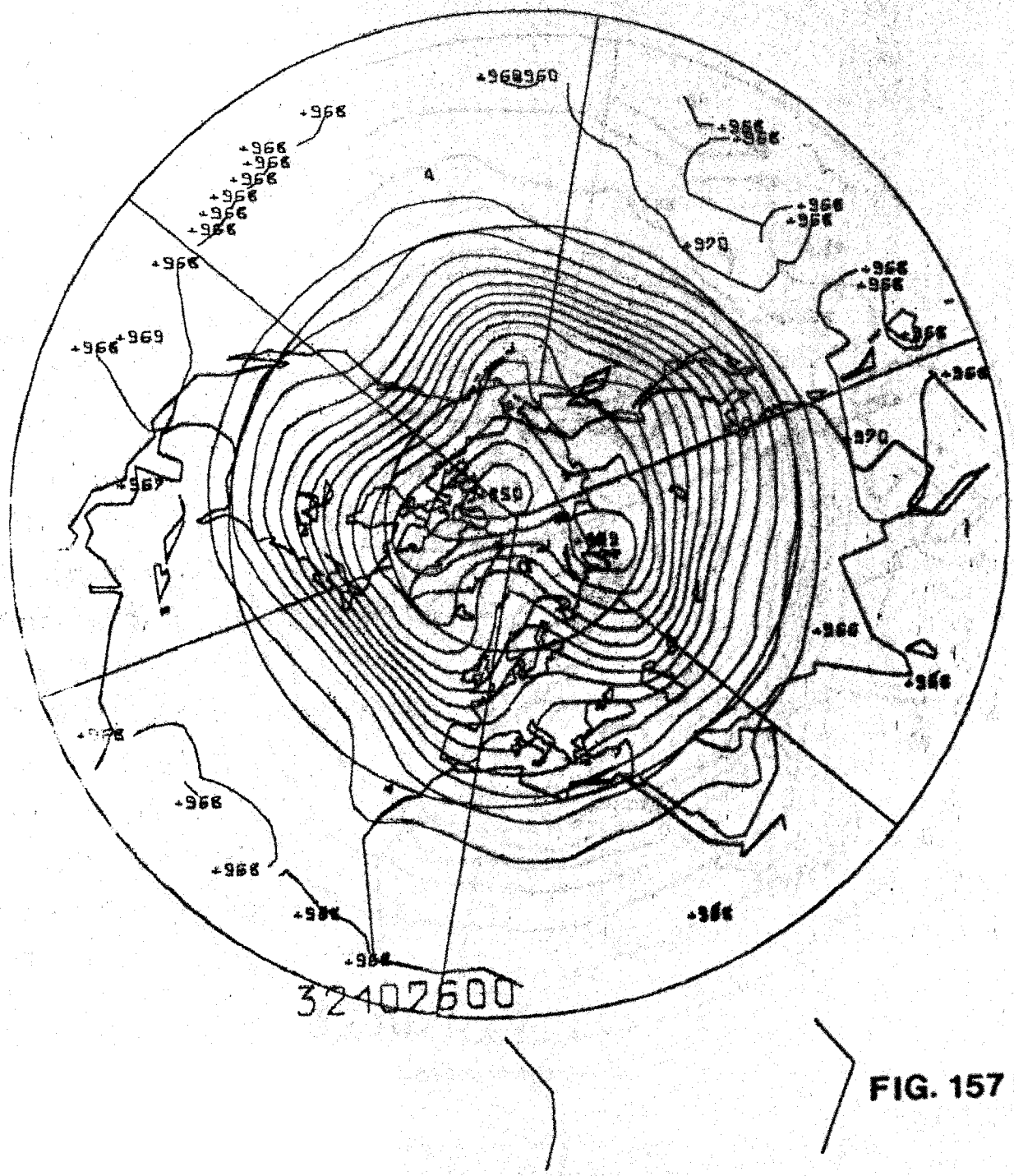


FIG. 157 b

$[T]_{(t)}$ 100 mb OCT. 1976

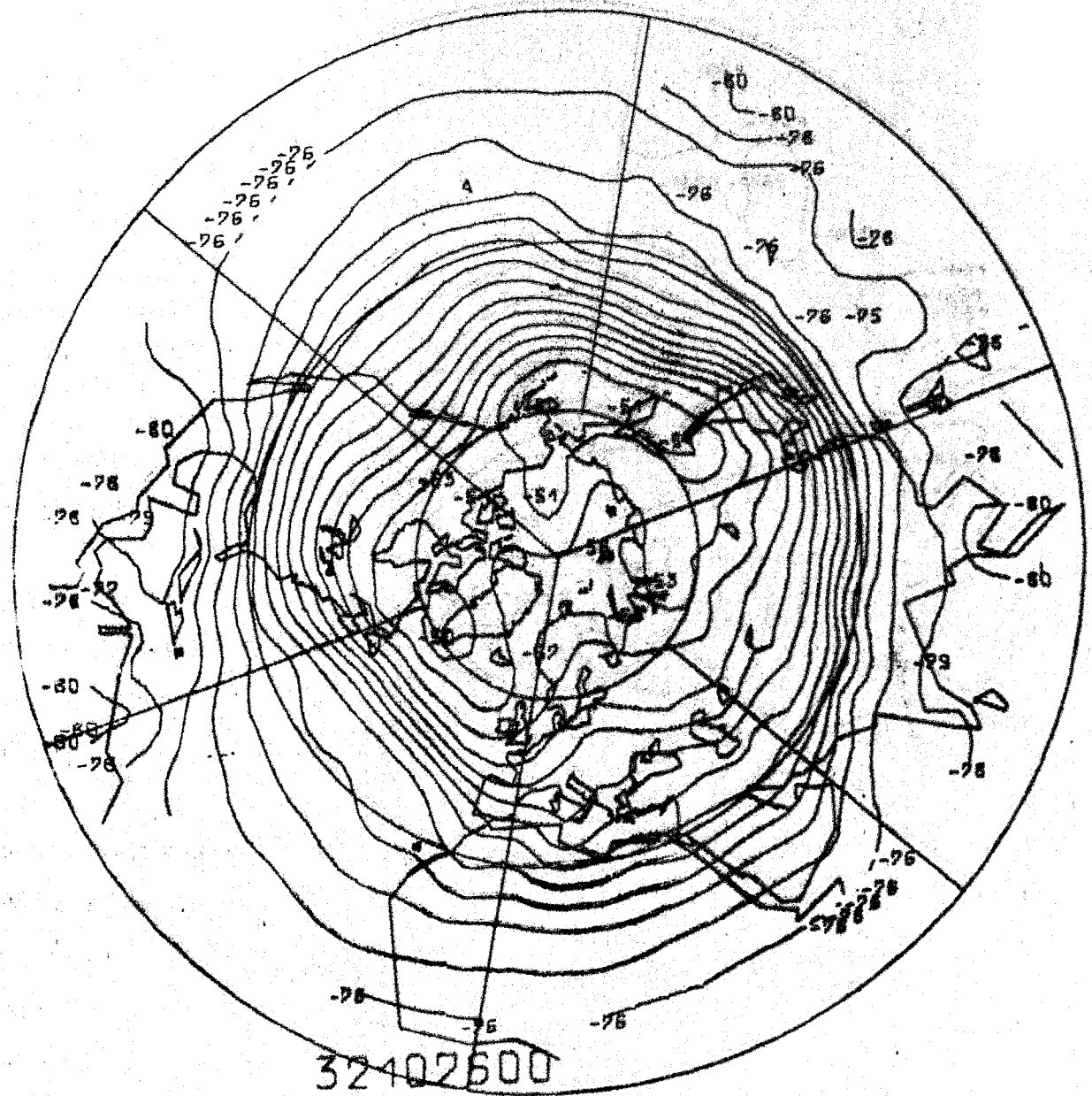
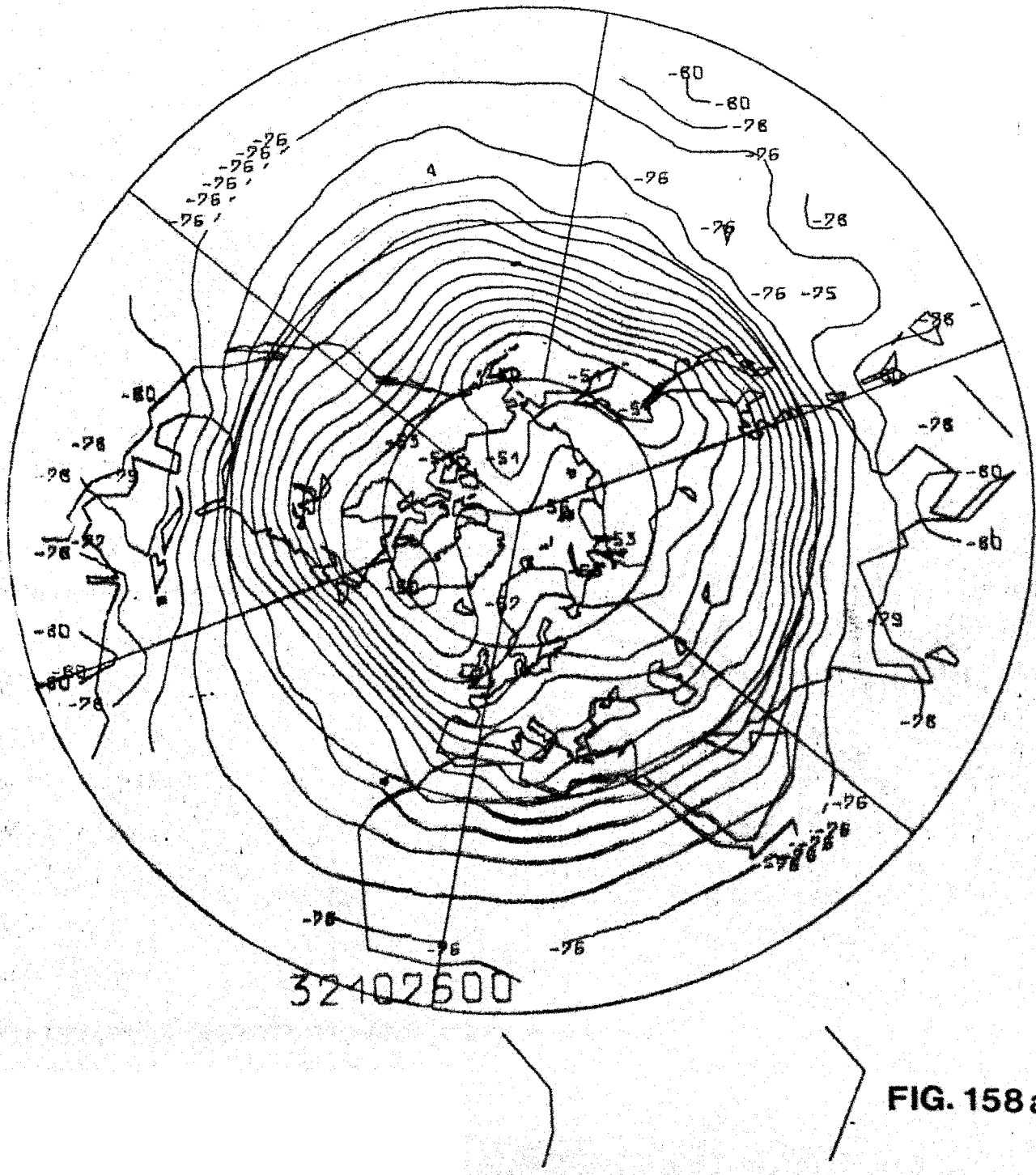


FIG. 158a

$[T]_{(t)}$ 100 mb OCT. 1976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$[\phi]_{(t)}$ 100mb OCT. 1976

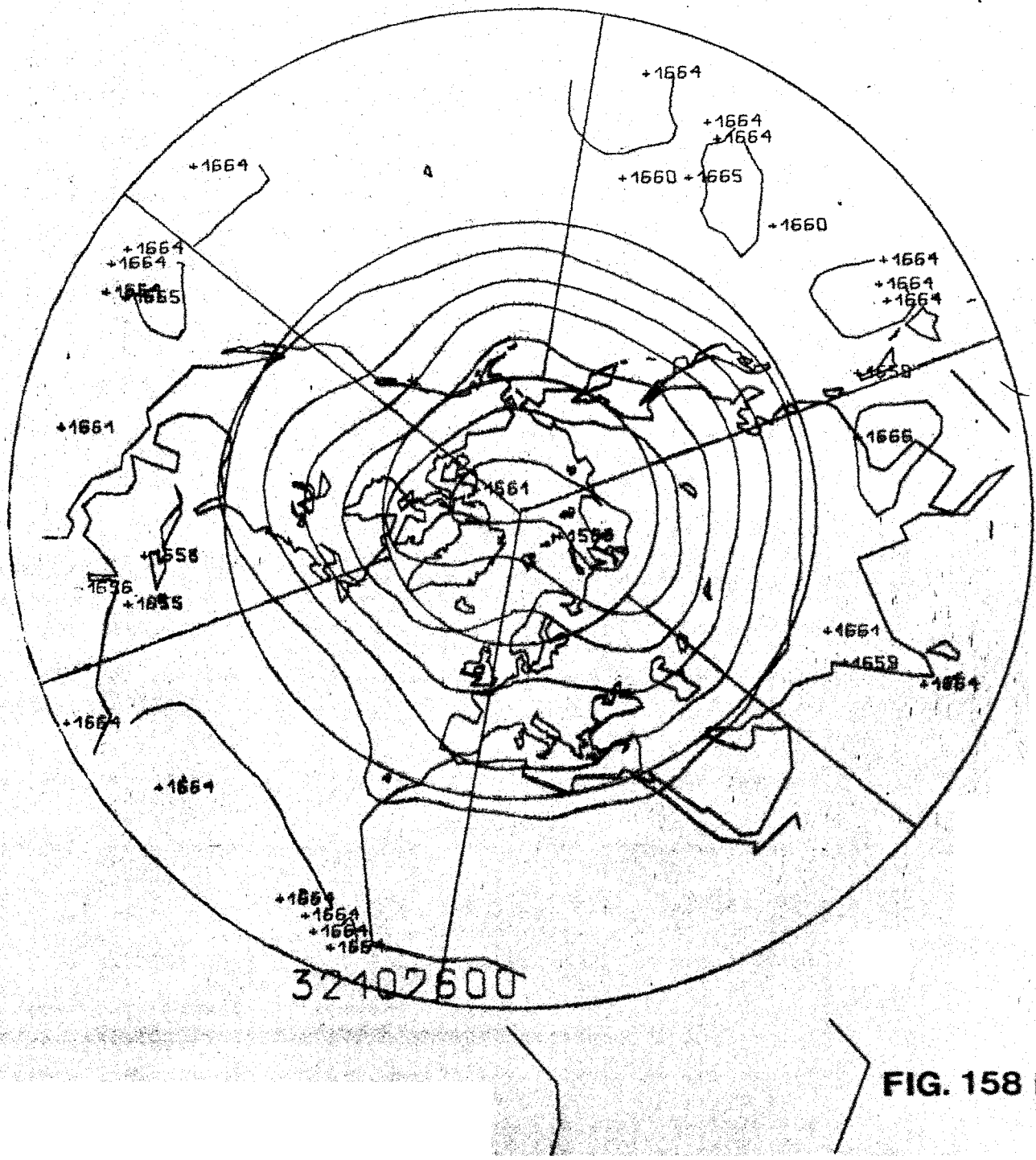

FIG. 158 b